

Vol. 6 . No. 4

80



GUARANTEE BUILDING CONDON Avenue at Wacker Drive THE HOME OF Michigan

# finish

MONTHLY TRADE PUBLICATION Established January, 1944 DANA CHASE PUBLICATIONS 360 North Michigan Avenue

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A trade publication devoted to the interests of the manufacturers of major home appliances and allied metal products. Govers plant facilities and manufacturing problems from raw metal to finished product, with aspecial emphasis on metal finishing. Free controlled circulation to management, purchasing, engineering and key plant personnel in companies intimately connected with the field covered. To others, subscription price (U.S. funds) \$5.00 per year. Editor and publisher, Dana Chasse. Associate editors, Proc. A. I. Appages, Proc. R. M. King, and Matt E. Heuertz.

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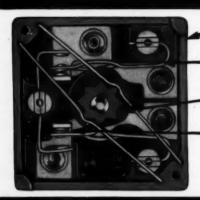
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CLASSIFIED ADVERTISING



ADVERTISERS' INDEX

RAW METAL TO FINISHED PRODUCT



- Compact—only 13/4" square. Permits smallest cluster.
- Phosphor Bronze Springs maintain proper tension permanently.
- Cam is made of tough, long-wearing plastic, molded to steel shaft.
- Large Silver Contacts insure better conductivity.

Recessed Terminals protect against shorting.

One-Piece Molded Bakelite Case; strong, durable.

Available in a choice of 3 shaft styles; 5 shaft lengths for easy adaptation.



# How...a new TK SWITCH

# with **7** Heats...**7** Outstanding Advantages

• Here at last is a new, practical 7-heat switch—a smaller and more compact unit than most present switches. The small size, only 13/4" square and 15/16" deep, permits better grouping—the smallest cluster of any switch on the market!

Note in the photos above the complete elimination of exposed terminals; they are recessed in the back of the case for added safety, making shorts practically impossible. All materials and workmanship are of the usual TK high quality . . . phosphor-bronze springs and silver contacts insure lasting dependability.

This new TK 7-Heat switch can add new selling features to your electric ranges. 7 heats give Mrs. Range Buyer a closer and more flexible control over heat—cooking is made easier. Adaptation to your ranges can be made quickly, without disrupting production. Write for complete details on this newest development in electric cooking! (5-Heat switches are also available in this new, compact design.)



# TUTTLE & KIFT, Inc.

1823 N. MONITOR AVE. • CHICAGO 39, ILL.
A Subsidiary of Ferro Enamel Corporation





with LOCKE BRICKS and BALLS"

SAVINGS UP TO 25% on grinding operations is a familiar story to enamelers who standardize on Locke's new, improved Bricks and Balls. Try them. Chances are you'll see marked improvement in your grinding operations... for three reasons:

- PASTER GRINDING—Locke Grinding Balls are handmade. This gives them a quick-acting irregular surface and a compact body that resists wear—keeps balls heavier, longer.
- 2 LONGER LIFE—Locke Bricks and Balls are more resistant to abrasion and breakage because they're completely vitrified—have no laminations or voids.
- 1 LESS CONTAMINATION—Made of special wet-process porcelain (originated by Locke in 1893), Locke Bricks and Balls are pure white and non-porous... do not require costly hand scrubbing... wash easily with a simple hosing.

Next time you need bricks and balls, specify Locke. Available for all standard mills.

MEMBER: PORCELAIN ENAMEL INSTITUTE

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BALTIMORE . MARYLANI

LOCKE BRICKS and BALLS

BETTER MADE... because they're backed by Locke's 55 years experience with wet process porcelain PLUS the product control and development facilities of the new Fred M. Locke Research Laboratory, one of the world's finest and largesti

# Want to SIMPLIFY YOUR BUYING

... SAVE TIME AND MONEY



Frits

**Furnace Tools** 

**Grinding Balls** 

Mill Lining Blocks

m tii

Mills

**Spraying Equipment** 

Cleaners

**Pickling Equipment** 

**Laboratory Equipment** 



# MAKE FERRO YOUR ONE SOURCE FOR ALL

# PORCELAIN ENAMELING SUPPLIES!

Need a new ball mill? A couple carloads of clay? Chemicals? Or pickling equipment? Regardless of what your Porcelain enameling needs are, Ferro can supply you . . . and save you time, effort and money. It will pay you to have a complete inventory made now of your Porcelain enameling supplies. When you send us your next frit order, just add the required items to it. You'll receive everything ordered promptly, in one shipment, on one invoice and, at the same time, you will receive the best Porcelain enameling supply items available anywhere, at the most economical cost per unit!

A Dependable Guide to the Best Supplies for Better Porcelain Enameling Today, with all items available, it is no longer necessary to keep three or four sources of supply on your books. Buying one item here, one item there, is poor economy. Centralized buying—the type of service Ferro offers you—is one of the quickest, simplest, and most logical ways we know to keep overhead costs at a minimum. If you don't have a copy of our latest price list, drop us a note and we'll be happy to mail you one. There is no obligation whatsoever.

FERRO

ERRO ENAMEL ORPORATION

oth Street Cleveland 5. Oh

# Many Porcelain Enamelers Prefer

TREOPAX Z TREOPAX S TREOPAX for

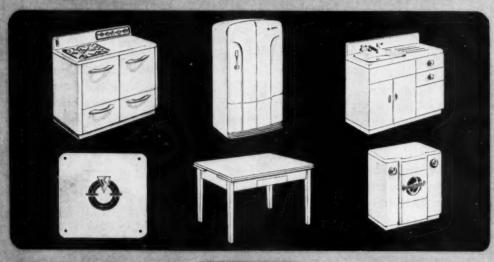
# Color Stability Scratch Resistance Opacity Enamel Working Properties

The experience of users is a good yardstick for determining the worth of a product. Our Field Engineers report the following summarized statements from Superintendents in the Porcelain Enamel Industry:

- TREOPAX Z "Very pleased with results...standardizing 100% on Z."
- TREOPAX 5 "Doing a beautiful job on table tops and sinks."
- TREOPAX Z "All white now being opacified with Z."

- TREOPAX "Rates as the best opacifier made."
- TREOPAX Z "Our standard opacifier in steel enamel."
- TREOPAX Z "Giving excellent results in zircon enamel."
- TREOPAX "Use being continued in cast iron and antimony AR."

Our field engineers are well equipped to discuss your problems. They can support their recommendations by laboratory data and by practical experience with shop conditions.

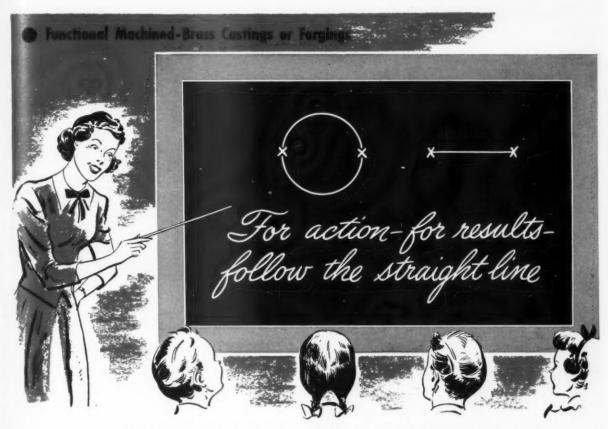


TAM

TITANIUM ALLOY MFG. DIVISION

NATIONAL LEAD COMPANY

Executive and Sales Offices: 111 BROADWAY, NEW YORK, N.Y. . General Offices and Works: NIAGARA FALLS, N.Y.



We all learned it in school—"A Straight Line Is The Shortest Distance Between Two Points". We learned that the circumference of a circle is more than three times the diameter. This means that it takes less than one third the time to follow a straight line from point to point than to go all around in a circle.

So if you find yourself going around in circles seeking a dependable source of functional machined-brass castings or forgings just think of that straight line—think of Detroit Brass. By going straight to Detroit Brass you'll gain the benefit of fifty years progressive experience.

Your need may be a standard valve or fitting or it may call for the development of a special item to meet a particular requirement. From idea and design through production and service we are equipped to assure exacting cooperation to the manufacturer seeking a dependable source of functional machined brass.

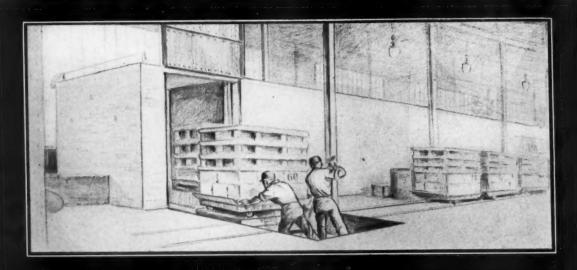
We are serving many industries which would indicate that we may have something to offer you. So for action, for results follow the straight line—to Detroit Brass.

Some of the scores of industries for which "Detroit Brass" has produced components in volume and variety—always on the same top-quality level:—

Agricultural • Aircraft • Automotive • Beverage • Cooking • Diesel Engine • Dry Cleaning • Farm Machinery • Gas • Gas Heating Equipment • Locomotive • Maritime • Milking Machine Equipment • Oil Refining Equipment • Oil Heating Equipment • Plumbing • Refrigeration • Rubber • Spray Equipment • Washing Machine • and others.



DETROIT BRASS & MALLEABLE WORKS







# For Trouble-free Service CRYSTOLON\* Kiln Furniture

The qualities of CRYSTOLON (silicon carbide) are such that car tops, batts, setter tile and supports give long, trouble-free service. They are mechanically strong and therefore can be made in very thin cross-section to save valuable kiln space. They will carry a load without deformation; their resistance to cracking is exceptionally good and to oxidation is adequate.

CRYSTOLON batts in pottery kilns withstand severe temperature changes and their relatively small bulk eliminates heat lost by having to heat up bulky kiln furniture. Some potteries have found it desirable to coat CRYSTOLON batts. Norton Company also provides a special patented batt having slots. These slots relieve the heat stresses often set up in the kiln and thereby greatly lengthen batt life in many instances.

\*Trade-mark Reg. U. S. Pat. Off.

NORTON COMPANY, WORCESTER 6, MASS.

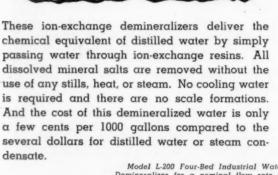
# New Improved "Lo-Hi"

The improved "Lo-Hi" process for the preparation of metals for plating and vitreous enameling has recognized the problems involved in procuring steel in the post war era best adapted to these finishes . . . This two-tank procedure not only removes soil of all types regardless of the quality of the steel but also activates the surface of the ware, completely conditioning it for ground coat . . . The new "Lo-Hi" process in addition to being longer lived, more economical and easily controlled can be depended upon to dissolve light surface rust and to soften scale and welded sections . . . Due to the thorough cleaning and surface activation of this two-tank process, savings in pickling time or acid concentration, or both, may be expected . . . The cleaning cycle is five minutes in each tank with no intervening rinse.

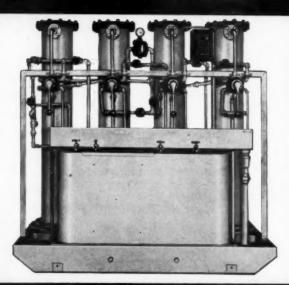


# For Mill Room ASSURANCE That the "SLIP" is Always RIGHT

# INDUSTRIAL'S NEW



Model L-200 Four-Bed Industrial Water Demineralizer for a nominal flow rate of 200 gph. Other standard models available with capacities of 5 to 1000 gph. Special units of any capacity engineered to requirements.



# For Dependable Results in Solution Clarification

INDUSTRIAL'S FILTERS AND FILTERING SYSTEMS

In production filtration here are some points to check. Compare these construction and operating features of Industrial's filters. Industrial's filters are conservatively rated on

capacity. Compare the filtration area, the sludge holding capacity of the filter chamber, and the pump characteristics. All these factors govern the capacity of the filtering system. The filter cloths in connection with filter aids provide efficient, low-cost filtration in either continuous or intermittent service.

The air wash cleaning feature does not require any dismantling of the filter or removal of the cover. Industrial's filters have operated for months without opening-opening is required only for replacing filter cloths or for periodic inspection. This feature is a great time and labor saver.

> \* Write for full information and recommendations



A typical Industrial Stationary Filter System. Standard models able and stationary types - are available in capacities of 100 to 15,000 gph. Special filters are engineered to meet unusual requirements.

FILTERS

PUMPS

Centrifugal

CORROSION TESTING APPARATUS Salt Fog Humidity

MFG. CO. RUBBER DIVISION **Vulcanized Linings** - Molded Products

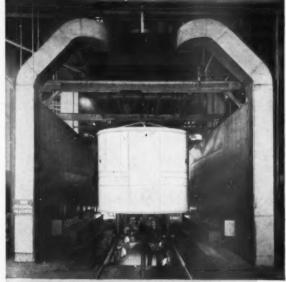
ION EX DEMINERALIZERS

1627 West Carroll Avenue • Chicago 12, Illinois

12



Finish Caat Mydro-Filter Spray Booths and Baking Ovens on Two Finishing Production Lines 1750 Ft. Lang—Part of a Complete Mahon Finishing System in Fruehauf's New Plant, Avan Lake, Ohio.



Fruehauf Truck Trailers Passing Through Mahon Hydre-Filter Chassis Spray Booth on One of the Production Lines at the Avon Lake Plant

# ... Better Finish at LOWER COST with Modern Finishing Equipment!

In any industrial plant where finishing constitutes a major operation, a modern, well planned Finishing System is essential to low-cost production . . . the equipment must be properly planned, and properly engineered and co-ordinated with the general production scheme, in order to achieve minimum finishing cost per unit processed in every day operation. That is why initial capital outlay for equipment of this type is a secondary consideration . . . that is why you should take advantage of the broadest experience available when contemplating new Finishing Equipment for your plant. The Mahon organization offers you the benefit of their experience in pioneering development in this highly specialized field through the past twenty-eight years . . . an accumulated wealth of technical knowledge and practical know-how not available to you elsewhere. See Mahon's Insert in Sweet's Mechanical Industries File for complete information, or arrange consultation.

THE R. C. MAHON COMPANY

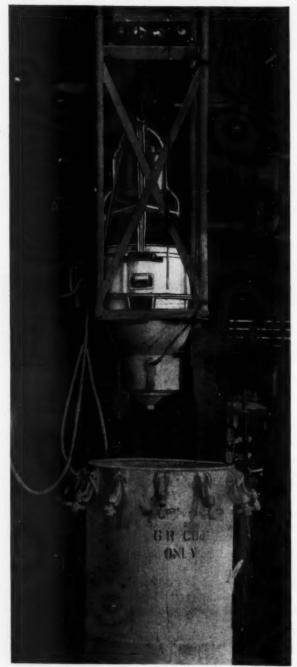
Home Office and Plant, Detroit 11, Mich. • Western Sales Div., Chicago 4, III.

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning and Chemical Preparation Equipment, Dry-off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply System, Drying and Baking Ovens, and Paint Reclamation System. Also, Core Ovens, Hydro-Foam Dust Collectors, and many other Units of Special Production Equipment.

MAHON

finish APRIL . 1949

# Rotospraying ...



One of the Rotosprays in use at the plant of American Central Division, Aveo Manufacturing Corp., Connersville, Indiana.

# is the STANDARD for SIEVING ENAMEL SLIP

Yes... Rotospraying is the accepted standard method for sieving enamel slips in today's modern porcelain enameling plants.

All modern enameling plants, large or small, use Rotospray equipment to assure perfect sieving of their slip. Larger plants have found that multiple installations pay for themselves over and over again in convenience and saving in time and labor of mill room personnel.

Every Rotospray is sturdy and long lasting. The first units ever built are still in operation today protecting the quality of the finished product which receives the lifetime porcelain enamel finish.

Check now to make sure that you have the required number of Rotosprays in your plant for properly protecting your quality finishes. Contact Rotospray or an authorized representative.

ROTOSPRAY
(Reg. U. S. Pat. Off.)
"Worth waiting lor"

Sales representatives —
B. F. DRAKENFELD & CO., INC., New York, N.Y.
PEMCO CORPORATION, Baltimore, Md.
O. HOMMEL COMPANY, Pittaburgh, Pa.
FERRO ENAMEL CORP., Cleveland, Ohio and foreign offices
CHICAGO YTTREOUS ENAMEL PRODUCT CO., Cicero, Ill.

BRAUN CORPORATION, Los Angeles, Cal. BRAUN KNECHT & HEIMANN CO., San Francisco, Cal.

Foreign representatives — WATFORD ENGINEERING WORKS, Watford, England ELOF HANSSON, Gothenburg, Sweden

ROTOSPRAYS ARE ALSO USED EFFECTIVELY IN CHEMICAL PLANTS, PAPER MILLS, AND POTTERIES

ROTOSPRAY MANUFACTURING COMPANY
562 WASHINGTON BOULEVARD . CHICAGO 6, ILLINOIS . TEL. DEArborn 2-7196

In 80 seconds
washer tubs
come clean
prior to
enameling
...with
PENNSALT
METAL
CLEANERS

When a huge press throws a 1000 ton punch into 18 gauge steel, it really pounds the drawing compound into the steel surface. In other words, a tough cleaning job pops up.

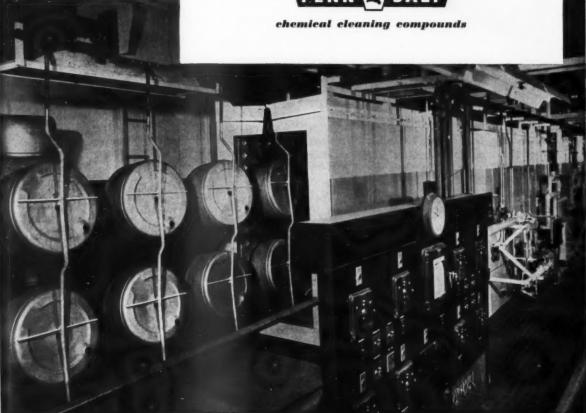
Yet 80 seconds' spray treatment with Pennsalt Cleaner solutions enables Heintz Mfg. Company to dig that soil out... leaving these home washer tubs clean and ready for the pickling and porcelain enameling operations.

In this method, Pennsalt EC-12\* and Pennsalt\*30 have done such a fast, efficient job that Heintz has had no cleaning rejects since the installation was made.

Satisfactory cleaning like this is being enjoyed all over the country by plants using Pennsalt Cleaners. Call in your Pennsalt representative, he'll be glad to discuss with you savings of time and money with Pennsalt's complete line of metal cleaners. Special Chemicals Division, Pennsylvania Salt Manufacturing Company, Philadelphia 7, Pa.

PREG. U. S. PAT. OFF.







That's what you'll be doing when you switch to OHCO products . . . frits, powdered clays, and oxides, etc.

The future never looked ROSIER than it does for users on the Hommel roster. (Five thousand of 'em, today!)

Uniformity? That problem's been licked completely.

Other problems that may have haunted and hampered you will vanish into thin air when you let the Hommel organization go to work for you.

When you want to know what's the latest in the industry . . . come to Hommel! This is the home of new developments—and has been for 57 years!

When you're designing a new product or a new shape—hop to Hommel! We're the lads who can help you "finish" it.

# **Laboratory Controlled Production of Ceramic Supplies**

- PITTSBURGH 30, PA.

  Pacific Coast Agents
  L. H. BUTCHER CO.
- FRIT for Steel, Cast Iron or Pottery
- CERAMIC COLORS
- CHEMICALS
- BRONZE POWDERS
- METAL POWDERS
- SUPPLIES
- EQUIPMENT

Our Technical Staff and Samples are available to you without obligation. Let us help you with your problems.

World's Most Complete Ceramic Supplier





THE FINISH LINE BORROWS AGAIN — from a bulletin of The Eastman Research Organization, New York, whose job it is to make studies of and for business publications. Comments received from a previous bit borrowed from an Eastman bulletin, and appearing on this page under the heading "Sermon in a Toilet Seat" (May, 1948), led us to believe that finish readers enjoy reading Mr. Eastman's material as much as we do here at finish. We will, therefore, quote liberally:

## What's the matter with the business press

"We are moved to this message by the experience of one of our clients in the business paper field.

"This paper in a few short years, and even doing things the hard way, has taken the lead over its much longer and more firmly established competitors in almost every respect except advertising volume and is making rapid headway in that.

"There wasn't anything wrong with the competitive papers that isn't wrong with the vast majority of business papers. In fact, one of them at least was doing an outstanding editorial job in a number of respects. . . .

"The success of this client . . . is attributable to just one thing:

#### **Editorial** guts

"They have had the nerve to lambaste the living tar out of the very industry they serve. And make 'em like it.

"How much good this has done the industry it is hard to say. Bad habits and vicious trade practices are not corrected over night, but it certainly has done the *paper* a whale of a lot of good.

"You might call this editorial enterprise, but it isn't. Its competitors have editorial enterprise too.

"You might call it fearless journalism, and so it is, but what is the merit in fearlessness when there is nothing to fear?

"It is nothing more than doing the job that a business paper is expected to do.

"And that's what's the matter with the business press-

"Not doing the job the business world expects the business press to do. And not doing it for so long a time that the business world has pretty near got through expecting.

"That's a strong indictment you say. Would we could make it stronger.

"Every industry and every trade is ridden with abuses too numerous to catalogue. What does the business press do about it? By and large it whitewashes them. It salaams before the industry it serves with a mawkish servility that is often downright sickening. It inveighs, when it inveighs at all, against the evils from which its own industry suffers but never against those in which

its own industry indulges. And so these industries and trades go on digging their own graves, alienating their customers, sowing the seeds of resentment and distrust, which are the most fertile seeds of communism, and the only voices raised against them are the voices of their enemies.

"Gentlemen of the business press, you neither recognize your power nor your obligation. You have the most powerful force for good that was ever put together in any country but you're not using it. If you fail to use it, it will be taken away from you.

"Editorial guts, did we say? Perhaps it's only editorial judgment you lack. What have you got to lose by calling the cards as they lay, by attacking straightforwardly the shortcomings of the industry you serve? The worst that can happen to you is to have your readers say, 'How true that is of all the rest of them.'

"All credit to the business press for the job it is doing, technically and in supplying, as it so well does, effective tools of management. For its service to the *hands* of industry.

"But shame for the job it is neglecting. For stifling the voice of censure. For failure in its service to the *heart* of industry."

#### But what about finish?

To avoid any possible misunderstanding, we will explain that Mr. Eastman is not referring to finish or the industries it serves in his comment. Nevertheless, it is food for thought in rechecking the editorial policies of any trade publication, including finish. We here at finish have tried to develop a strong and constructive editorial policy. Within the short life of our publication, we have attempted to offer specific constructive suggestions and in some instances have been critical of apparent negligence or backwardness on the part of segments of the industries we cover.

A few examples of suggestions or criticisms that have been presented, either on this page or in the editorial pages of *finish*, are represented in the following:

Finish pushed titanium enamels into the limelight in January, 1946, by publishing the first complete detailed information on developments in that field.

Finish was critical of the table top group for its failure to produce new designs and to develop new products for the kitchen furniture field. Apparently our criticism was not strong enough in that instance to win the desired results, for the market has been largely lost to competition in recent months.

Finish has repeatedly jogged the refrigeration manufacturer to give recognition to the demand for porcelain enameled exteriors on refrigerators. Porcelain enameled exteriors will return, you can bank on that, but the

to Page 77 ->



# Enameler's Data Sheet No.



An informative series on titanium-bearing killed steel for the enameling industry. Issued monthly by Inland Steel Company. Reprints of all data sheets are available upon request.

# CHIPPING GREATLY REDUCED BY USE OF SINGLE COVER COATS ON TITANIUM STEEL

Because titanium enameling steel eliminates the necessity for a cobalt-oxide ground coat (discussed in Enameler's Data Sheet No. 2) enamel finishes can be produced with only a single, thin white cover coat. This is possible because titanium combines with the carbon in the steel so it is not free to react with other elements present, to form the gases responsible for blackspecks, enamel pits, and enamel blisters.

Since white enamels can be successfully applied *directly* to titanium-bearing killed steel, the total enamel thickness necessary for satisfactory coverage is greatly reduced.

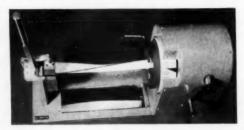
Many advantages follow from this fact; but possibly the greatest single gain to producer, dealer, and consumer results from the reduced chipping of the thinner enamel coating.

#### Chipping Due to Torsion

It is generally agreed that the thicker the enamel coating on a warped piece of enameled ware, the more likely it is to break when forced and fixed into place during fabrication and assembly. Similarly, many of today's enameled products risk damage in transit, even though packaged exceptionally well, because of easily chipped thick enamel.

Hoping to eliminate the loss from chipping, dealers of porcelain enameled products have, in fact, at times demanded the development and use of organic coatings to replace enameled coatings. The ultimate aim of the enameling industry is to obtain a finish with a thickness equivalent to that of organic finishes; that is, approximately .003 inches.

Frit manufacturers have developed cover coat frits so highly opaque that satisfactory coatings can be obtained on titanium enameling steel with as light an application as 20 grams per square



Torsion test showing test strip being twisted to 110° before enamel failure. The titanium steel strip is enameled with a single coat of titanium acid-resisting enamel.

foot—a coating approximately .004 inches in thickness.

#### **Twist Test Results**

The experiments of one large manufacturer dramatically illustrate how these thinner coatings affect chipping. It was found that if the enamel coating on a metal test strip is under .005 inches thick, the strip can be twisted more than 100° before the coating breaks. (See illustration.) In contrast, a strip with an enamel thickness of .015 (average thickness for ground coat plus cover coats) could be twisted only 45° before failures occurred.

In actual practice, the use of single enamel coats on titanium enameling steel has practically eliminated chipping during assembly and transportation, due to the much higher flexing and torsion really thin enamel coatings can withstand.

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#### Impact Chip Test

Though chipping from impact is not so large a problem in production and transportation as that of chipping from torsion, the question of impact-chipping becomes an important factor in product life.

A thicker enamel coating would naturally be expected to sustain more impact blows than a thinner coating before

being broken. Under impact testing, it has been found that a thinner enamel coating will crush or pulverize sooner under repeated blows, whereas a thicker coating has a greater tendency to chip. The damage caused by chipping is by far the more unsightly.

It can be seen, then, that products of titanium - bearing killed steel benefit producer, dealer, and consumer through reduced chipping. The next Enameler's Data Sheet will discuss the sag resistance characteristics of titanium enameling steel.

Today's demand for TI-NAMEL greatly exceeds our ability to supply it. But we look forward to the time when porcelain enamelers everywhere can take advantage of this superior enameling base metal.

## Inland Steel Company, 38 S. Dearborn St., Chicago 3, III.

SALES OFFICES: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

OTHER PRODUCTS: Bars • Sheets • Strip • Structurals
Plates • Tin Plate • Floor Plate • Piling • Reinforcing Bars
Rails • Track Accessories



# INLAND TI-NAMEL

TITANIUM-BEARING KILLED STEEL ENAMELING SHEETS

# **Sink production at American Central**

including information on fabrication, pickling equipment, porcelain enameling, handling, and automatic equipment for packaging

# By Walter Rudolph

A MERICAN Central Division, Avco Manufacturing Corp., at Connersville, Indiana, produces one of the country's finest lines of kitchen sinks and cabinets under the trade name of American Kitchens. An integral part of the production picture is this plant's porcelain enameling plant, combining skilled metal finishing, and thousands of feet of conveyorized cleaning, enameling, and packaging operations on sinks themselves.

Storage of enameling iron sheets is adjacent to the press department. Movement from stock piles to shearing and presswork is expedited through the use of overhead cranes and jitneys. Presswork proceeds in job lots of material, according to production requirements.

The company designs and manufactures its own dies for the drawing, forming, piercing, flanging and trimming operations required to make the American Kitchen line of sinks. Large toggle and hydraulic presses are primarily used in this work.

#### Group work at presses

Group work is the rule at any individual press, contingent upon the size of the press and the size and weight of the sink units being processed. Two men may feed from one side of a press, and two men remove the sink after the operation is completed.

We are speaking here, of course, of the two-bowl sink unit. After the first deep draw which makes a sink bowl, two such bowls are trimmed on a side for the center joint or parting line. This line is are welded to make the strongest possible union and the twobowl unit then proceeds through successive steps in presswork.

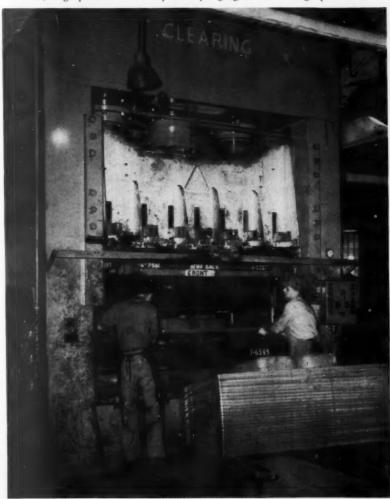
One factor that aids in speeding these successive operations is a num-

ber of toggle presses in line. For instance, the first press pierces and trims the sump or drain hole in sinks, which are then moved to the next press for "wiping" of the outside flange.

"Breaking the back up, and knocking the corners down" on two-bowl sinks is performed on a press with a capacity of 12 strokes per minute, two men feeding and two men removing sinks.

A number of dies are used on the large bed of a 300-ton hydraulic press to perform operations dovetailed for efficient mass production. Eight men work at this press to coordinate the simultaneous operations. On one side

After two drawn bowls have been welded together for a two-bowl sink, large presses are used for the flanging and trimming operations.









Left: Several dies in bed of hydraulic press are used simultaneously in trimming and perforating operations.

of the press, sinks are placed on dies for back flanging; at the same time, men on the other side of the press position sinks for piercing of the faucet holes. Work tables at strategic intervals around the press bed aid the operators in handling the heavy pieces, and passing them from one to another operation.

Underframing or cabinet work for sinks is largely done by resistance welding, utilizing a great variety of precision-framing fixtures and special welding machines. Again, work of this nature has been carefully studied to fit into the mass production picture at American Central, proceeding swiftly from one operation to another through skillful grouping of welding machines, fixtures and operators, and traveling of sub-assemblies, where required, on roller conveyors.

# Metal finishing 70 two-bowl sinks per hour

One of the interesting metal finishing operations entails a seven-man crew in speedy group work. These men stand at the ends and along the sides of an elbow-high two-inch steel pipe table along which the sinks pass. About 70 two-bowl sinks can be finished in an hour, in some 30' of traveling through this group.

Two men at one end of the table repair corner cracks that may result from a re-drawing operation that follows gas welding of the two bowls at the sink's center. They weld with gas, using enameling iron welding rod. The sink is slid along to the next two men who, using 24 grit paper on airpowered grinding wheels, smooth off

Left center: Seven men along a steel pipe work table finish off steel sinks, smoothing all imperfections, at the rate of about 70 per hour.

Left: Overall view of the 12 pickle room tanks in porcelain enameling division. Electric hoists raise and lower loaded baskets. Notice large stacks for up-drast ventilation. Right: Some 40 sinks can be held in this type of basket used for cleaning and pickling at American Central.

front and back corners of the sink.

The ware moves next to a worker who finishes over the front rail, and next to a man who takes out any dings and files two back corners. Lastly, a worker checks over the entire sink for misses along the line, and straightens the back splash. A few feet from this group operation, the sink goes to an arc welder who attaches hanging plates for porcelain enamel.

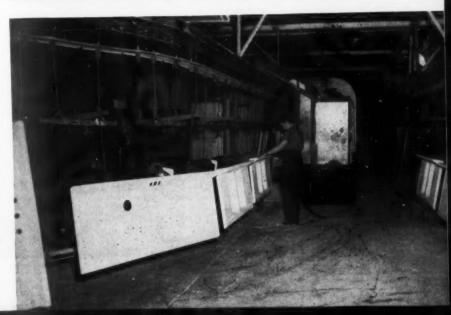
The company has evolved an intererting method of handling sinks during cleaning operations. After metal finishing, the approved sinks are stored in a large room adjacent to the one housing the pickling tanks. A manually-operated convevor serves these two rooms. except for an electric hoist that lifts loads out of and drops them into the pickle room tanks.

## Conveyor basket holds 40 sinks

An integral part of this manual conveying system is a basket-type holder with a capacity of about 40 sinks. It is constructed principally of one-inch Monel metal angles with heavier supporting members and a strip bottom. At the two doorways at either end of the cleaning and storage rooms, joining them, this basket is pushed onto a turntable arrangement for entering and leaving the two rooms.

The pickling room exhaust system consists of overhead ventilating stacks that create a natural up-draft ventilation. The exhaust stack ventilation is supplemented by large exhaust fans in two walls of the pickling room. Automatically controlled steam coils





Right center: View of turntable arrangement at entrances to pickle room that allows baskets to be manually positioned for travel through storage and loading.

Right: Before sinks enter a furnace. they are air-hosed to make sure no foreign matter goes along to cause defects in the finished ware.



Left: Spraying sink covers in one of three water-wash, pressurized and airconditioned spray booths.

As the baskets leave the last tanks, they are manually unloaded and the sinks are hung on a nearby overhead chain-type conveyor for traveling through the drying oven, at from 300 to 350 degrees. Leaving this oven, the conveyor carries the ware into the enameling setup.

# Water used in millroom is synthetically distilled

All water used in the mill room for the preparation of liquid enamel is de-ionized or synthetically distilled to provide uniformity in the water used. Water hardness is kept below 0.5 for this purpose. (Very soft water is used in the pickle room.)

Special equipment is used to completely clean and de-humidify the compressed air used for spraying enamel. All oil, moisture and dust are removed from the air by this equip-

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are used for heating. Acid tanks and nickel tank are constructed of a concrete shell lined with acid-proof membrane, which in turn is lined with acid-proof brick bonded with acid-proof cement.

The cleaning setup itself consists of twelve 3000-gallon tanks in parallel arrangement, utilized ordinarily in groups of three with a number of the pickle baskets aiding in maintaining the flow of sinks through the system. The first three tanks contain cleaning solutions at about 212 degrees and are followed successively by hot and cold rinse tanks, the former at about 150 degrees.

Out of cold rinse, baskets go into an 8% sulphuric acid solution in either of the next two tanks, which are followed by another rinse tank. The ninth tank is the nickel bath; this is followed by another rinsing operation, and then in succession, two neutralizing dips, in borax and soda solutions.

Right: View of special packaging rig used at American Central to speed shipment of porcelain enameled ware.



APRIL . 1949 finish

# **Enamel division program**

# for A.C.S. fifty-first annual meeting

THE 51st Annual Meeting of the American Ceramic Society will be held April 24 to 28, in Cincinnati, Ohio. Meeting headquarters and all general functions will be at the Netherland Plaza Hotel. Most of the Divisions, including the Enamel, will meet in the Netherland Plaza.

At the Annual Banquet on Tuesday evening, John W. Whittemore, ACS president, will present his report, and new officers will be installed. Plant trips have been arranged in the Cincinnati area for Thursday.

B. J. Sweo, of Ferro Enamel Corporation, is program chairman for the Enamel Division. The program of the Enamel Division, as released by ACS, follows:

#### Monday Afternoon, April 25

1. A Rapid Method for Nickel Coatings on Enameling Iron

BY L. C. IKENBERRY AND J. J. CAN-FIELD, Armoo Steel Corporation, Middletown, Ohio.

A rapid photometric method is described for the determination of nickel on nickel-coated steel. The method is very rapid, requiring less than 5 minutes, and the standard deviation was found to be 0.0028 gm. Ni/sq. ft. of surface when testing a sheet carrying 0.10 gm. Ni/sq. ft. of surface, The sample is obtained by dissolving the nickel coating on a small area with dilute nitric acid. The nitric acid is confined by the use of a weighted rubber ring and is withdrawn by suction into a 200-ml. Erlenmeyer flask, marked at 200 ml. A large excess of ammonium hydroxide is added, followed by ammonium persulfate and dimethylglyoxine. The solution is diluted to 200 ml. with water and after filtering off the ferric hydroxide, the intensity of the red color, which is proportional to the amount of nickel present, is measured by means of a photoelectric photometer.

 Study of Electroplated Coatings on Steel with Respect to Their Effect on the Adherence of Vitreous Enamels

By V. D. Frechette, D. Weintraub, and Bernard Schwartz, New York State College of Ceramics, Alfred, N. Y.

Metal coatings electroplated on steel were found to affect enamel adherence.

Lead plating tended to decrease adherence, and antimony plating appreciably increased adherence. Commercial white cover-coat enamels were applied successfully to antimony-plated steel without the use of a ground coat in both laboratory and plant trials. A review of the theories of adherence is included.

3. Water and Its Significance in Porcelain Enameling

By FLOYD H. KAHLER AND JOHN F. WANTZ, Illinois Water Treatment Co., Rockford, Ill.

A discussion of the various sources of raw water and a brief description of each source is given. The dissolved mineral solids found in the various waters are described along with an explanation of the various terminologies used in water chemistry. An explanation is given of ionization and how the phenomenon makes possible the conversion of hard water to soft water through the use of sodium exchangers. The operation of sodium exchangers and their importance in furnishing soft water for cleaning metals prior to enameling is discussed. An explanation of the chemistry involved in deionization or the removal of all mineral solids through the cation and anion exchange process is given. The importance and advantages of using solids-free water in enameling operations is discussed and typical examples cited. A description of

the mechanical parts of deionizing equipment, examples of equipment, and operational costs are given.

#### Tuesday Forenoon, April 26

4. Factors Influencing the Oxidation of Iron in the Firing of Ground Coat Enamels

BY RALPH L. COOK AND ROBERT F. KIMPEL, Department of Ceramic Engineering, University of Illinois, Urbana, Ill.

The oxidation of the iron beneath a ground-coat enamel was measured by recording the progressive weight change with a sensitive balance upon heating a specimen from room temperature to 1550°F, and correcting for the volatile constituents. The permeability of the dry unfired enamel films was correlated with the variables characteristic of ground-coat enamel slips. The different clays caused the greatest change in the permeability of the unfired films in which the ball clays gave less permeability than the kaolin clays. The results showed that the permeability of the unfired coating was not an index to the amount of oxidation which occurred when the coating was fired on iron. The oxidation studies indicated that (1) a kaolin clay in an enamel slip allowed less total iron oxidation than did a ball clay, since the latter clay allowed a more permeable coating to develop between 900°F, and its

Lest to right: Enamel Division Trustee, Frank Porter; Secretary, Fred Petersen; Program Chairman, Ben Sweo; Division Chairman, Dwight Moore.



fusion temperature, believed due either to tusion temperature, believed due either to the organic material or the free silica con-tent of the ball clay, (2) the nickel de-posited on the iron by nickel flashing caused a decrease in the total amount of iron oxidation, and (3) with low-tempera-ture ground coats the rate of metal oxi-dation was the same as with conventional ground coats to the fusion temperature of the low-temperature enamel, but due to the lower fusion temperature the total amount of oxidation was considerably less than with regular ground-coat enamels.

## 5. Observations on the Bubble Structure of Ground Coat Enamels

By Alexis J. Hannan, Pemco Corporation, Baltimore, Md.

During the past three years, changes of an almost revolutionary nature have taken an atmost revolutionary nature have taken place in ground-coat enamels. Both maturing time and maturing temperatures have been radically reduced. This paper is concerned with a study of the effects of these changes on the bubble structure of ground-coat enamels—especially with regard to a comparison of the effects of clays and mill additions upon the bubble structures of ground-coat enamels of various types. ous types,

## 6. The Relation of Expansion as Measured by Warpage to Crossbend Failure of Porcelain Enamel

BY D. R. GOETCHIUS AND E. E. BRYANT, Ferro Enamel Corporation, Cleveland, Ohio.

## Tuesday Afternoon, April 26

7. Effect of Electrolytes, Commonly Used in Mill Additions, on the Properties of a Titania-Opacified Enamel

BY EDWARD E. MARBAKER, Mellon Institute, Pittsburgh, Pa., and HOLLIS S. SAUNDERS AND LEON N. BAUMER, The O. Hommel Co., Pittsburgh, Pa.

Six commonly used electrolytes, KCl, K<sub>2</sub>CO<sub>5</sub>, NaAlO<sub>5</sub>, MgCO<sub>5</sub>, and KMO<sub>5</sub>, were added singly in amounts of ¼ and ½ % to millings of a standard TiO<sub>2</sub>-opacified frit and 4% clay. Combinations of ¼ and ½ % of each in pairs, and of ¼ % each of some of the electrolytes in groups of three were studied. The properties of each slip and, after spraying on ground-coated plates, of the enamel fired at 1500° and 1520°F. for three minutes, after the furnace had come back to the desired temperature, were determined. It was found that these electrolytes had definite found that these electrolytes had definite influences on reflectance and color in varying degrees. The gloss, finish, and solid resistance were not affected. The effects of additions of urea and other additives, were determined. were determined.

## 8. Fundamental Aspects in Research on Titanium Enamels

BY SANFORD S. COLE, Titanium Alloy

Mfg. Division, National Lead Company, South Amboy, N. J.

Factors dealing with differences in properties of titanium enamels are discussed. The crystallization of titanium oxide is shown to have an influence on the properties of the enamel. The mechanism of the crystal formation is discussed as a physicochemical reaction. Various oxides are considered with respect to effect on opacity and other properties. opacity and other properties.

# 9. A Systematic Study of Simple Titanium Bearing Porcelain En-

By A. L. Friedberg and F. A. Petersen, University of Illinois, Urbana,

An extensive composition study of titanium enamels and their properties is described. The compositions investigated contained only six constituents:  $Na_3O$ ,  $K_2O$ ,  $SiO_2$ ,  $B_2O_3$ ,  $TiO_2$ , and  $F_3$ . Systematically and over a wide range, the contents of SiO<sub>2</sub>, B<sub>2</sub>O<sub>3</sub>, TiO<sub>3</sub>, and alkali were varied. 100 enamels in all were made and the resulting properties were determined. Properties noted included flow, expansion, color, percentage anatase, and gloss, reflectance, and acid resistance at various firing temperatures

From this study, enamel Y12, repre-senting a small area in this large composi-tion field, exhibited the desirable propertion field, exhibited the desirable proper-ties requisite for a good hollow-ware white cover-coat enamel. Compared to previously studied titanium enamels this enamel is "softer," fires at lower temperatures, has the desired higher flow and expansion, yet still possesses the required properties of color stability, reflectance, gloss, acid re-sistance, and workability.

#### 10. Acid Resistance Characteristics of Titanium Enamels

BY LEE R. FULLER

The present investigation is concerned with a study of the resistance of a num-ber of different titanium enamels to various acids, including variations in acid re-sistance induced by different maturing temperatures and methods of treatment. It also includes a comparison of the re-liability of the results obtained in acid-resistance tests with titanium enamel and nontitanium enamels.

#### Wednesday Morning, April 27

11. Effects of Acid Treatment on Abrasion- and Acid-Resistance of Porcelain Enamel

> By W. N. HARRISON, J. C. RICHMOND, AND J. R. CRANDALL, National Bureau of Standards, Washington, D. C.

Experiments showed that some enamels. Experiments showed that some enamels, which showed little or no tendency to lose gloss or retain pencil marks as a result of a standard treatment with 10% citric acid, were nevertheless more readily abraded on the acid-treated areas than on the untreated areas. This discovery has a bearing upon testing for acid resistance which has not heretofore been recognized,

which has not heretofore been recognized, and indicates that an abrasion treatment is an essential part of evaluating the resistance of enamels to attack by acids. Other experiments showed that it was possible to improve the resistance of some enamels to attack by certain household acids, e.g., citric, through pretreatment with other acids that did not themselves produce objectionable staining. These effects were noted on titania-opacified enamels.

## 12. Correlation of Weather Resistance of Porcelain Enamels with Chemical Test Data

By B. J. Sweo, Ferro Enamel Corporation, Cleveland, Ohio.

Twenty-one enameled specimens exposed for a period of approximately ten months in an industrial area and graded visually for weather resistance. Weightloss data were obtained on exposure to boiling solutions of (1) distilled water, (2) 6% acetic acid, and (3) 5% sodium pyrophosphate. Acid-resistance data were pyrophosonate. Acid-resistance data were obtained by means of the spot test method. These data are correlated with the weather resistance ratings. Loss of weight on exposure to boiling acetic acid appeared to give the best indication of weather resistance.

# 13. Gardner Laboratory Training Course in Appearance Measure-

BY RICHARD S. HUNTER, Henry A. Gardner Laboratory, Inc., Bethesda,

The subject of appearance measurement is not taught in present-day schools be-cause the subject bridges the fields of physics, psychology, and electrical engi-neering. So many questions about this subject have arisen in the minds of owners subject have arisen in the minds of owners and prospective owners of the appearance measuring apparatus that a course in Appearance Measurement has been organized and is being given periodically by the Henry A. Gardner Laboratory at Bethesda, Md. The course has been planned at an elementary level and is designed to teach the student the head of the course has been planned at an elementary level and is designed to teach the student the head of the course has been planned at an elementary level and is designed to teach the student the head of the course of t planned at an elementary level and is designed to teach the student the basic details of the subject. Such a knowledge of basic details is needed before one can appreciate the very great amount of advanced work on this subject available in the scientific and technological literature. The course consists of lecture and laboratory work. It attempts to do four things: (1) explain and demonstrate the proper techniques for using appearance measuring instruments, (2) describe the appearance scales on which results from these instruments are given, (3) study the components of instruments and their functions, and (4) study the sources of errors and and (4) study the sources of errors and trouble which may arise and methods of eliminating them. A 2½-day and a 5-day course have been organized. The 5-day day course have been organized. The 5-day course includes a greater amount of material on appearance scales and on the applications. The classes have been limited to 20 students each; four have already been given. The idea for this course originated in discussions with Members of The American Ceramic Society at the 1948 Annual Meeting in Chicago.

# **Auto-age street signs for San Francisco**

embossed porcelain enamel signs aid motorists in city where signs are submitted to very rigorous weather

By George W. Purser • TRAFFIC ENGINEER, SAN FRANCISCO BUREAU OF PUBLIC WORKS, AS TOLD TO Elsa Gidlow



With regret the San Francisco Bureau of Engineering decided some two years or so ago that the city's street signs were ob-

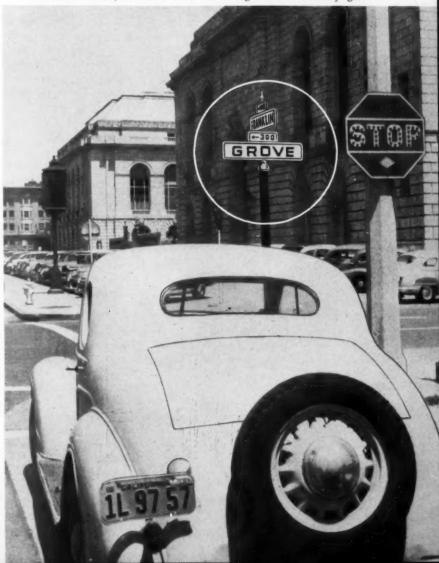
solete. The regret was due to the fact that the neat blue and white markers familiar to San Franciscans and visitors to the city for more than 25 years were porcelain enamel and still quite usable. That is, their condition was good. The verdict of obsolescence was rendered because one had to look at them "hard" and rather "slowly" to read what they said. The darkish blue background with white lettering may not have been the happiest choice in the first place, from the point of view of legibility; added to that, the signs were smallabout 16" x 31/2".

"All right for the horse-and-buggy age," the city supervisors observed, "but altogether too reticent for this movie age of hot rods and streamlined limousines rushing to some place fast." Furthermore, San Francisco was growing. New sections where no streets had been before were developing. New residents, who didn't even know where the old streets were, peered at the dim signs through the evening fogs and had a bad time. Tourists, whose good will the City values highly, were always getting lost. Much of the motorists' bad time resulted from the fact that the shy lettering on the dark ground eluded them altogether as they rolled by, and if they decided to turn a corner onto another street looking for the 600 block, there was nothing to tell them in advance whether to

turn left or turn right: they just had to guess.

Faced with the choice of putting up more of the old type signs as new sections were developed, or boldly designing better signs, the Bureau of Engineering took the latter course, realizing, however, that a new sign job for the entire city was what was needed. The new Apparel Center was the guinea pig section. At the intersections were erected handsome

A visitor from Western Canada wrote the San Francisco Hall that its new street signs were the best "on the North American continent." They can be seen with 20/20 vision at 200' and at night as well as in daylight.





This is the "model sign" exhibit that sold San Francisco officials on a new street marking program. Maps on walls show city's street systems.

markers which a motorist, with an eye on traffic, was able to read in one quick glance. Hardly a second glance was needed to tell him which block he was approaching. There was immediate enthusiasm for the new signs.

They were porcelain enamel, black on white. The letters were embossed. The sign itself was at least twice as large as the old ones and the letters were much larger, clearer, bolder. The "St." had been left off to provide more space for larger and more legible lettering.

# Details of new signs

The sign plates are 33" x 7" and the block-number plates above them, 12" x 41/2". Letters on the name plate are 4" high, on the number plate 2" high, and are raised or embossed. There are two separate plates bolted back to back for each sign. Each plate is enameled on both sides, using 20 gauge steel, the process being to first enamel the entire plate black on both sides, next, to enamel it white on the front and then to put it through a series of brushes which eliminate the white from the embossed letters and border, leaving them standing out black against the white background.

Hoping to make the program citywide, the Bureau adapted the new signs to the type of pole in use on the city streets. The pole is 3" standard pipe, 10' high. Two feet of the pole are buried in concrete, leaving eight feet above the street. On the top of this (for the new signs) is a pole cap which is set over the post and held in place by four set screws. The pole cap is tapped and a 3/4" rod inserted to project above it. The two sign faces, bolted together, the sign face protected from the bolts by leather washers, are inserted over the rod at the desired angle.

Separators hold the signs at right angles to each other, each separator having a boss which fits into a notch at the top of the sign. In cases of streets which do not meet at right angles to each other an adjustable separator is provided. Immediately above the name sign is the block number sign with an arrow pointing in the direction in which numbers increase. The rod is then capped again for a finish.

#### Reasons for legibility

Because of the larger size of the signs, it was necessary to set the standards farther back from the curb. In spite of this, they can be seen by a 20/20 vision easily from 200 feet. It is not only the larger size that accounts for the legibility, it is the size plus strongly contrasting black on white, plus embossing, plus design and spacing of the letters and numbers.

The embossing helps legibility a great deal because it produces shade

and allows the sign to be read at more acute angles. Sheen, or reflection of light from car headlamps at night, is minimized.

TRANSIT

The first signs in the new design went up about 18 months ago. They were admittedly experimental, one hundred of them confined to the Apparel Center, a fairly self-contained tract which had neither streets nor signs. The Bureau saw the move as a trial balloon and frankly hoped the public would like it. The public did. Compliments flowed in from residents and visitors alike. As a result the decision was finally made to equip the entire city with signs of the new design. But a good deal of wrangling took place first because certain groups, arguing for "economy", insisted on something "less expensive" than porcelain enamel being used. The economizers pulled for a variety of compromises but mostly "nothing but educated paint" (baked enamel).

#### Cost factors

The newly-designed plate, in porcelain enamel, costs about \$2.00. The old, small sign—at prices current when it was made—cost \$0.65. Substitute materials discussed fell in between. The arguments which ended in giving the victory to porcelain went like this.

The plate isn't all you have to consider. There's all the cost of setting it up, the labor. If you sacrifice durability for false economy, you pay out a lot more in the long run on maintenance and repair and replacement.

With porcelain we know it's not guesswork: we've had the experience of porcelain enameled signs for the past 25 years or more. We know their performance.

#### Climatic conditions

San Francisco has climatic problems where signs are concerned. The city is on the sea coast and weather observers explain that a small amount of sea water is continuously being lifted up by the prevailing west wind blowing off the Pacific Ocean and through the metropolis. Salt is dissolved in this moisture. When it hits metals, in the process of evaporation

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SAFE TRANSIT

# ENGINEERED PACKAGING REDUCES SHIPPING LOSSES



To meet the tests for packaged products outlined in the National "Safe Transit" program, you will need to study your packaged products "from the ground up." Then, you must be sure of a properly engineered "package."

Our modern research laboratory and our experienced packaging engineers are at your service, without obligation, to assist in pre-checking and for any research work that may be required.

We manufacture all types of wooden boxes and crates and are therefore in position to consult with you without prejudice and to recommend the best package for your product from the standpoints of quality, shipability, and cost.

Be sure to protect those valuable finished products with the right box or crate for "Safe Transit."



PLYWOOD CRAVENEER WIREBOUND
CLEATED CORRUGATED
BOXES OR CRATES

(HICAGO MILL AND LUMBER COMPANY

33 South Clark Street

Chicago 3, Illinois

Plants at: Helena, Ark. • Greenville, Miss. • Tallulah, La. • Rockmart, Ga. • Chicago, III.

# **National SAFE TRANSIT program**

# wins industry acclaim

A T a meeting held in Chicago on Tuesday, March 1, the Coordinating Committee of the National "Safe Transit" Program met with R. F. Bisbee, general chairman, to study the acceptance thus far accorded the cooperative program for the reduction of shipping losses.

Plans were made for a larger meeting to be held soon in Cleveland, Ohio, where all representatives of the manufacturers' associations, carriers' associations, container associations and other members of the complete committee will be called together to review the program and plan for future developments.

It was agreed by the Coordinating Committee membership that the progress made to date was all that might be expected and sufficient justification for all of the hard work and time that has been spent by the leaders in this activity.

A report from Harold Massey, assistant managing director of the Gas Appliance Manufacturers Association, showed that as of the date of the meeting over 60% of the total production of gas ranges was represented by individual manufacturers who have signed up to participate in the program as outlined by the Committee. A report from R. H. Thompson, Maytag Company, Newton, Iowa, and chairman of the Traffic Committee for the American Washer and Ironer Manufacturers Association, showed definite progress among the leading producers of washer and ironer equipment, with a number of firms yet to be heard from.

Professor F. A. Petersen, Ceramics Department, University of Illinois, representing the Enameled Utensil Manufacturers Council, reported that 100% of this organization have signed up to use Project I-A of the "Safe Transit" program (Project I covers PACKAGED PRODUCTS over 100 pounds. Project I-A covers

PACKAGED PRODUCTS from 5 to 100 pounds)—although EUMC members have unanimously approved the I-A program, it will not be released to industry in general until it has the approval of the Industry Committee at the next official meeting.

It is expected that by the time of the next official meeting of the entire Committee the other national associations will have made their reports to show the ever-increasing momentum which the National "Safe Transit" Program is gaining after only a few short months of cooperation on the part of all interested groups.

Reports presented at the meeting also showed activity on the part of

the Carriers to accelerate their educational work designed to further reduce shipping losses that may be the result of careless or improper handling of PACKAGED PRODUCTS.

Ralph Bisbee, general chairman, reported on the first test flight sponsored by Air Cargo, Inc., with the cooperation of Trans World Airlines, for check testing the results which may be expected in air transport. Dana Chase, chairman of the Educational Committee, showed a series of educational posters and booklets which have been produced and distributed by the Union Pacific Railroad to the proper sections of its organization.

# Flight test for SAFE TRANSIT program



IRST commercial airline flight test to determine effects of landings and other flight conditions on packaged, finished products through the use of a two-way ride recorder was made from the Mansfield, Ohio, Airport through the cooperation of Air Cargo, Inc., and Trans World

Airlines. In the accompanying photo, Miss Geraldine Koch, hostess, is shown as she gives a receipt for a crated testing instrument to R. F. Bisbee, general chairman of the Packaging and Shipping Committee of the National "Safe Transit" Program. Others in the foreground of the photo

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are, left to right: Paul Bush, of the Technical Planning Division of the Committee, P. B. Fleming, of the Educational Division, and T. A. Ansell, station manager for TWA. The two-way ride recorder was shipped to the West Coast, back to Newark, N. J., then reflown to Mansfield. Gov-

ernment and "Safe Transit" Committee members officiated at the opening of the recording device. The nation's airlines joined other national carrier groups in promoting the Committee's work which is expected to materially reduce damage to crated, finished products while in transit. manufacturers of kitchenware is evidenced in the fact that they have already unanimously approved the project and are installing the necessary equipment for conducting the preshipment tests.

# Tests completed for packages under 100 lbs.



The men in this photo are watching a demonstration of a pre-shipment test specified under Project 1-A (under 100-pound packages). Included are, standing left to right: J. Puglisi, Westinghouse; F. A. Petersen, University of Illinois; E. H. Shands, Geo. D. Roper Corp.; R. F. Bisbee, Westinghouse; W. L. Yingling, American Trucking Associations; A. E. Dowling, Railway Express Agency; A. L. Green, Association of American Railroads; P. W. Bush and W. B. Keefe, both of Westinghouse. Grouped in front of tester are: M. A. Ritchie, Geo. D. Roper Corp.; L. H. Cargill, Packing Service Corp.; and F. Prinz, Westinghouse.

A LONG series of tests on PACK-AGED PRODUCTS weighing less than 100 pounds culminated in a meeting of the Porcelain Enamel Institute Packaging and Shipping Committee for conducting final PACK-AGED PRODUCTS tests at Westinghouse Electric Corporation, Mansfield, Ohio. Professor F. A. Petersen, of the University of Illinois, has been in direct charge of the extensive tests, working with E. H. Shands, Geo. D. Roper Corporation, chairman of the Technical Planning Division.

The Committee has now completed its recommendations for pre-shipment testing of PACKAGED PRODUCTS under 100 pounds, published as "Project I-A". These recommendations comprised the second pre-shipment testing formula developed under the industry "Safe Transit" program for reduction of in-transit damage to finished appliances and allied metal products. While some complete appliances will fall under the 100-pound weight limit for complete PACK-AGED PRODUCTS, it is expected that the chief interest among appliance producers in this program will be for the shipment of parts. Project I-A will be presented to the complete industry committee for approval before it is distributed to individual manufacturers. Strong interest in this phase of the program among the

# Official personnel list of SAFE TRANSIT program

In January finish an organization chart for the Packaging and Shipping Committee of the National "Safe Transit" Program was published. A revised chart, including additions, was published in the March issue. For the benefit of those who would contact the official representatives of the various participating organizations, we are presenting here the names and addresses of these official representatives as available at the time of publication.

Packaging and Shipping Committee R. F. Bisbee, General Chairman Westinghouse Electric Corp. Mansfield, Ohio

#### Coordinating Group

Technical Planning Division
E. H. Shands
Geo. D. Roper Corporation
Rockford, Illinois

Educational Division
C. B. Williams
Ferro Enamel Corporation
4150 East 56th Street
Cleveland 5, Ohio

Dana Chase Dana Chase Publications 360 N. Michigan Avenue Chicago 1, Illinois

P. B. Fleming Westinghouse Electric Corp. Mansfield, Ohio

Secretarial Division
Edward Mackasek
Porcelain Enamel Institute, Inc.
1010 Vermont Avenue, N.W.
Washington 5, D. C.

# **Industry Representatives**

American Washer & Ironer Manufacturers Association
R. H. Thompson
The Maytag Company
Newton, Jowa

Gas Appliance Manufacturers Assn. Harold Massey 60 East 42nd St. New York 17, N. Y.

National Electric Sign Association Maurice R. Ely 224 S. Michigan Ave. Chicago 4, Illinois

Institute of Cooking and Heating Appliance Manufacturers S. V. Dunckel Shoreham Hotel Washington 8, D. C.

Enameled Utensils Manufacturers Council

Prof. F. A. Petersen Ceramic Department University of Illinois Urbana, Illinois National Electric Manufacturers Assn. Edward Zelinski Hotpoint, Inc. 227 S. Seeley Street

Chicago 12, Illinois

Porcelain Enamel Institute, Inc. E. H. Shands Geo. D. Roper Corporation Rockford, Illinois

Enameled Cast Iron Plumbing Fixtures Assn. I. J. Fairchild 1709 M Street, N. W. Washington 6, D. C.

# **Carrier Representatives**

Association of American Railroads A. L. Green 59 East Van Buren St. Chicago 5, Illinois Railway Express Agency A. E. Dowling 212 East 43rd Street New York 17, N. Y.

American Trucking Associations, Inc. John M. Miller 1424 16th Street, N.W. Washington 6, D. C.

Air Cargo, Inc. Emery F. Johnson National Airport Washington 1, D.C.

# **Container Representatives**

Wirebound Box Manufacturers Association L. S. Beale 105 S. LaSalle Street Chicago 3, Illinois

The photo below shows some of the publicity given the National "Safe Transit" Program by a number of trade publications.



Industrial Packaging Engineers Assn. of America C. J. Carney 20 West Jackson Blvd. Chicago 4, Illinois

Fibre Box Association H. S. Adler 224 S. Michigan Ave. Chicago, Illinois

National Wooden Box Association C. D. Hudson Washington, D. C.

Watkins Container Manufacturers Association J. R. Watkins Room 2109

100 N. LaSalle St. Chicago, Illinois

#### Others

American Society for Testing Materials W. B. Keefe Westinghouse Electric Corp. Mansfield, Ohio

Packing Service Corporation L. H. Cargill 135 Greenwood Ave. Windcote, Penn.

Impact Register Company
E. C. Manthei
510 North Neil St.
Champaign, Ill.

L. A. B. Corporation H. G. D. Nutting 31 Union Place Summit, New Jersey

#### Important

For those who have copies of Project I (the Blue book) Test Equipment and Procedures as issued by the Technical Planning Division of the Packaging and Shipping Committee, Porcelain Enamel Institute, Washington, D. C., the following is an important notation that should be placed in this book for plant use: "Sequence of Testing. The vibration test outlined should in each case be run before the impact test is run."

# Gas range manufacturers approve SAFE TRANSIT program

NE of the earliest organizations to report to the Coordinating Committee of the National "Safe Transit" Program was the Gas Appliance Manufacturers Association, of New York City. Their report dated February 8 covered results of balloting of the domestic gas range manufacturing group. In his report to the PEI Coordinating Committee, Harold Massey, assistant managing director of the Association said: "The results of our questionnaires to the industry indicate that shipping damage is a serious problem with everyone who replied. All, furthermore, approved the plan to reduce such damage, as outlined in the "Blue" and "Red" books of the Packaging and Shipping Committee.

"All voted 'yes' to the question, 'Do you Approve the equipment and procedures recommended for testing packaged units?'"

The companies replying to the questionnaires sent out by GAMA fall into two classifications. The first group represents those manufacturers who indicate they will install the equipment outlined in Project I (the "Blue" book) and do their own testing. This group represents approximately 40% of the gas range production of the country. The second group includes those companies

who answered "yes" in response to the following question included in the questionnaire: "Will you utilize the services of a commercial laboratory, approved by the Packaging and Shipping Committee, to make such tests?" This second group has an annual production of approximately 20% of the units manufactured in the United States today. As can be seen, these two groups combined represent over 60% of the total gas range production.

While manufacturers representing less than 40% of the units are yet to be heard from, it is anticipated that additional companies will join in the program once they thoroughly understand the advantages to be obtained by individual companies through whole hearted support of the project.

Reports from other important segments of the appliance manufacturing industry will be presented in finish as they are made available. This report gives ample evidence of the carefulness with which the "Safe Transit" program is being studied and the high percentage of gas range production which is represented by the early affirmative ballots serves as a well deserved tribute to the hard work of the Coordinating Committee members who planned the "Safe Transit" program so carefully.

Following is a list of the first gas range manufacturing companies to formally approve the "Safe Transit" program for their individual manufacturing facilities: American Stove Company

Automatic Range Company Caloric Stove Corporation Crosley Division, Avco Manufacturing Corp. Crown Stove Works Detroit-Michigan Stove Co. Dortch Stove Works, Inc. **Dwyer Products Corporation** Florence Stove Company Floyd-Wells Company Gaffers & Sattler Grand Home Appliance Co. James Graham Mfg. Co. Hardwick Stove Company Kalamazoo Stove & Furnace Company Majestic Manufacturing Co.

Malleable Iron Range Co.
Norge Div., Borg-Warner Corp.
Oakland Foundry Company
Occidental Stove Company
O'Keefe & Merritt
Roberts & Mander Corporation
Geo. D. Roper Corporation
J. G. Slattery & Bros., Inc.
Tappan Stove Company
Western Stove Company
Wrought Iron Range Company

# We're all for the SAFE TRANSIT program

we have been "aiming" right for some time—now have adopted the "safe transit" standards—reducing damage, reducing manufacturing cost

By Fred C. Heyl . MANAGER OF QUALITY CONTROL, WESTINGHOUSE ELECTRIC CORPORATION, SPRINGFIELD, MASS.

THE story that is currently un-I folding about the "Safe Transit" program sponsored by the Porcelain Enamel Institute is more than just good news to us at the East Springfield Works of Westinghouse Electric Corporation, as our packing problems range from small cartons for hand vacuum cleaners all the way to large crates used for milk cooler cabinets and bottle vendors. We well realize, from long experience in packing and shipping this large variety of products, that no single problem in the electric appliance business reaches into the areas of unit costs, unit performance, good relations with dealers, and customer satisfaction any more definitely than does packaging.

Thus the standardization of testing procedures that are recognized by all the carriers is not only going to help us, but is, in our opinion, a real example of the American way of solving a problem that in the end affects only the cost of the product to the customer. It is rather silly to design and crate every electric appliance against damage from rough handling, and then argue about who broke it, when a simple package testing procedure developed scientifically can be used to reduce design, packing and transportation costs, as well as time spent adjusting claims for damage often hard to trace.

Of course, it is not as easy as it may sound, but certainly it is good sense to aim in the right direction by adopting the recommended test procedures, add to the record of shipping experience by making ride recorder tests, and keep accurate records.

At East Springfield, we have been "aiming" right for some time. Several years before the last war, we had a Conbur test in operation. We also had shock and ride recorder instruments and a vibration tester of our own design. This test apparatus was particularly valuable during the war when delicate precision-made products, such as torpedo controls, had to be shipped to a customer who had to be satisfied.

### No standards available

Our package testing has always been done by the quality control department. It has been the subject of many discussions as to whether the procedures followed were too severe, a real duplication of actual shipping hazards, etc. No standards were ever really agreed to by all department concerned, and many times actual trial shipments were made for positive proof of the pack or unit design, although it was recognized by everyone that this method was expensive and time-consuming.

A crated Westinghouse product is given vibration test to predetermine ability of packaged unit to withstand transportation vibrational shocks.



# **How Union Pacific is tackling**

# the freight loss and damage problem

A GRASS roots campaign to reduce freight loss and damage was inaugurated the beginning of this year by Union Pacific Railroad's freight claim department.

The effort is based on a series of 12 posters directed to freight handlers, operating men, and all others associated with the movement of freight. Color posters, 17 x 22 inches, will appear on bulletin boards at freight houses, yard offices and other strategic points along Union Pacific's 10,000 miles of track, with a new poster appearing each month.

## Offered to other railroads

Thirty-six thousand posters have been printed, the great majority of which will be used on Union Pacific. Sets are also being supplied to other interested railroads eager to investigate new weapons for use in the battle against the nation's annual bill for rail freight loss and damage, a bill which recently exceeded the \$100,000,000 mark.

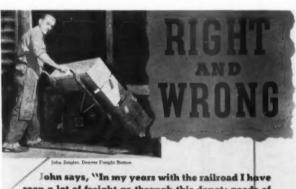
O. J. Wullstein, Union Pacific general freight claim agent who conceived the campaign and under whose direction it is being carried out, pointed out that posters of this nature directed to freight handlers and operating men are not new, that similar material has been distributed from time to time by the Association of American Railroads and also by individual railroads.

#### The employee speaks

"However," declared Wullstein, "our current campaign is the first one of a localized nature and which attempts to build morale and strengthen employe relations as well as educate. Our objective is to go right to the men working with freight. Much has been said to railroad executives and management about freight handling but all too little to the man on the freight dock, in the yards, and the train crew member."

Union Pacific has localized its posters by a specific rather than a general approach. In lieu of the usual

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John says, "In my years with the railroad I have seen a lot of freight go through this depot; goods of every description light and heavy, durable and fragile alike. There is a RIGHT and a WRONG way to do everything, and handling freight is no exception.

YOU TOO CAN AVOID DAMAGE TO FREIGHT ... KEEP SHIPPERS SATISFIED... AND THUS ASSURE THE PERMANENCY OF YOUR JOB.

Preight Claim Dep't...Union Pacific Railroad
O. J. WULLSTEIN, GENERAL FREIGHT CLAIM AGENT
OMAHA. NEBRASEA

UNION PACIFIC

Shown are two of the series of 12 posters which the freight claim department of Union Pacific Railroad is using in its campaign to reduce rail freight loss and damage.



# More letters on SAFE TRANSIT program

## **American Stove Company**

#### To Committee:

We have your letter of February 18th with reference to the testing procedure outlined in Project I by the Packaging and Shipping Committee.

This information has been of great value to us. By using the Conbur incline test equipment and the L.A.B. vibration table in the manner specified in Project I, we have been able to discover faults in the assembly and crating of our ranges. These changes have been in effect since the first of 1949 and we have already seen a great reduction in shipping damage.

We have had the Conbur equipment in our plant for two or three years. We have had the vibration table for approximately eight months. However, we were unable to find any procedure which would correlate the test results with the actual field conditions until the issuance of the information covered by Project I. . . . We had been using two one-way shock recorders in our shipments. These gave us some information, but not enough. We purchased a two-way shock recorder about four months ago. This, of course, has enabled us to obtain all the necessary information in our tests.

To repeat, the damage to our shipments since the first of the year has been very much less than previous shipments. We wish to express our thanks to all those who participated in the work involved in Project I. It has been of invaluable assistance to us. . . .

> L. S. Kauffman Quality Control Director

# Landers, Frary & Clark

## To Committee Chairman:

I have followed with great interest the Industries' Cooperative Plan for reducing shipping losses in porcelain enamelware. You and your committee are to be congratulated for their excellent work and progress on a problem that has plagued our industry for many years.

At the present time, we are daily making use of the majority of testing equipment outlined in the preliminary recommendations of the Packaging and Shipping Committee, and you can be assured that we will give every support to the final draft of approved standards.

H. E. Allen Chairman of the Board

# Union Pacific Railroad Company To Finish:

I have just had an opportunity to complete the reading of the January, 1949, issue of "FINISH." I had previously heard of the program being sponsored by the Porcelain En-

to Page 78 (Column 3) ->

# **B-G KRAFT CRATE**

The Collapsible Corrugated Crate with Both Horizontal and Vertical Wood Cleats



An under sink cabinet Kraft Crate as used by one of the country's largest mail order houses.

If full coverage of your product is wanted, we recommend B-G Kraft Crates. This crate has the four sides (called a mat) made of corrugated fibre board reinforced with both vertical and horizontal wood cleats. The mat is so nailed at the four corners that it can be collapsed, shipped flat and warehoused in a minimum of space. A big saving results in the assembly as the only nailing required is into the bottom and top. The wood cleats furnish good handholds for truckers thus insuring careful handling at all times.

In case an Open Slat Type crate is wanted, we recommend our exclusive B-G Tight Corner Hinged Crate which is also collapsible, unusually rigid and strong and quick to assemble. It is made of hardwood throughout, predrilled with nail holes to prevent splitting and to speed up the nailing.

Besides the above crates, we can furnish Box Shooks, Pallets and Bulkheads.

Our crate designers will work with you to develop the best and most economical container for your products. Write us fully.

# BIGELOW-GARVEY LUMBER CO.

General Office and Laboratory

320 West Huron Street • Chicago 10, III.

Mills • Arkansas • Georgia • Wisconsin • Minnesota • Washington

# Government expenditures and effects of tax policies

# on corporation earnings

R VIDENCE that the business community, nationally, the press and plain wage earners and small investors all give hearty approval to the series of newspaper advertisements started in February by a moderate sized Pennsylvania manufacturer to "tell the other side of the profit and loss system" of American business was given at a press conference held by Col. W. F. Rockwell, board chairman of the company, in Chicago recently, and attended by the editor of finish.

The advertising program, launched in full page space in newspapers in for free, private enterprise, he said, his company feels "it is a contribution to our national welfare. . . ."

"Let us hope that there is still time to convince our people that we have outdistanced every other nation in past or present history through the individual, competitive free enterprise system, which cannot survive without adequate profits."

"The lowest standards of living and the greatest restrictions on personal liberty," he added, "are found in the countries which have adopted socialism and communism."

The following are press conference

comments by Col. Rockwell concerning governmental expenditures and effects of tax policies on corporation earnings:

"Current press dispatches have reported from Washington that 'Federal, state, and local governments in the United States will spend over 65 billion dollars in the next fiscal year,' which is nearly one-third of the projected national income. If there should be a serious recession, with a large increase in unemployment, the government will probably spend much more money, which may easily

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## Editor's Note:

As finish readers know, our publication does not normally concern itself with government policies, tax policies, or the question of corporation earnings. In the accompanying message by Col. W. F. Rockwell, however, there seemed to be pertinent thoughts which seem to be of common interest to all those concerned with product manufacturing — from top management to key plant operators. We shall be happy to receive any reader comments, from those who may either agree or disagree with Rockwell's statements.

25 cities in February and carrying the signature of Standard Steel Spring Company, Coraopolis, Pa., has now expanded to 37 newspapers in 27 cities, running at two-week intervals, he said. Total circulation of these newspapers is 12,500,000.

Evidence of the acceptance and approval of the Standard Steel Spring program was a display of editorial comment from leading newspapers and other publications across the country. Also shown at the press conference was a display of letters from heads of firms, organizations, schools and banks, and from individuals, commending the idea behind the campaign.

Col. Rockwell pointed out that his company does not produce or market a single product or service of a consumer nature. In presenting the case Shown here is a reproduction of one of a series of newspaper advertisements being run to "tell the other side of the profit and loss system."



# FOR BETTER PORCELAIN ENAMELING



# METALWASH EQUIPMENT FOR SPRAY PICKLING STEEL PRIOR TO PORCELAIN ENAMELING

METALWASH pickling machines wash, rinse, pickle, nickel coat, neutralize and dry all sizes of steel parts prior to porcelain enameling. This fully automatic continuously operating equipment produces a cleanly pickled nicely etched surface, evenly nickel coated, and completely neutralized and dried — entirely without manual handling.

The machine is a compact, enclosed unit equipped with an efficient venting system which prevents obnoxious vapors from escaping into the pickling room.

METALWASH automatic spray pickling machines, similar to that pictured above, are now in operation in many leading plants manufacturing ranges, refrigerators, washing machines, cabinets, cooking ware and other porcelain enameled products. Manufacturers report that these machines have increased production as much as 50 per cent, improved working conditions in the pickling room, and produced the finest quality porcelain enameled ware. Our engineering staff will be pleased to help you solve your pickling problems. Write for further information.

ENGINEERS AND MANUFACTURERS OF ALL TYPES OF METAL CLEANING, PICKLING, AND DRYING EQUIPMENT

METALWASH MACHIERY CORR

# The modern porcelain enamel research laboratory

By Dr. G. H. Spencer-Strong . VICE PRESIDENT AND DIRECTOR OF RESEARCH, PEMCO CORPORATION, BALTIMORE, MARYLAND

O RGANIZED industrial research in the porcelain enamel industry, as in most other American industries, is a comparatively recent development. For many years, research and development activities were carried on by enamel plant production personnel utilizing production equipment. One of the first industrial laboratories in the industry, and the first frit company laboratory, was established by Pemco Corporation-then known as Porcelain Enamel Manufacturing Company - in 1921. This laboratory, along with the greater part of the remainder of the old plant, was destroyed by fire in 1924. A new plant on Eastern Avenue was built to include facilities for an expanded laboratory which has continued to grow over the years.

By 1939, the company's laboratories (including research and development, customer service, and control) had expanded to occupy the greater part of the second floor over the northern end of the plant building. About this time, two moves were made which have greatly influenced the more recent development of the laboratories.

First, the control section was moved into the plant and provided with its own facilities, except for a chemical laboratory. Second, a portion of the main laboratory was subdivided to provide completely equipped individual laboratories for the research and customer service personnel whereby not more than two investigators were forced to use the same enamel application and firing equipment. These moves were so successful that at the end of the war when peace-time operations could be considered, not only was the control division given a separate laboratory to replace the quarters referred to (which were a war

casualty) but also the customer service division was moved to a laboratory of their own thereby minimizing operational interference between the personnel of the laboratory divisions and considerably increasing the efficiency of the workers.

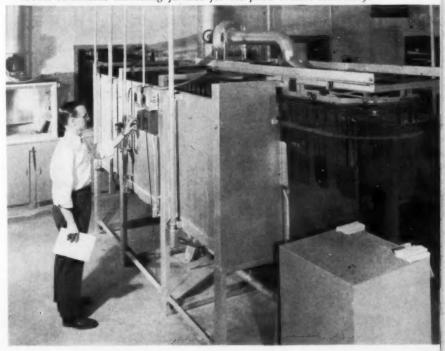
In the latter part of 1947, the Research and Development Laboratory had grown to a point where additional expansion was necessary. Three practical solutions to the problem were available: (1) a complete reconstruction of present quarters; (2) construction of a new building; (3) removal to an available building located some distance from the plant but unusually well suited for laboratory purposes.

The third alternative was chosen for a number of reasons—not the least of which was the fact that past experience with the separation of the various laboratory divisions had indicated that removal of the research and development division from the everyday interferences normal to the close contact between manufacturing and research should still further increase the efficiency of the laboratory operation.

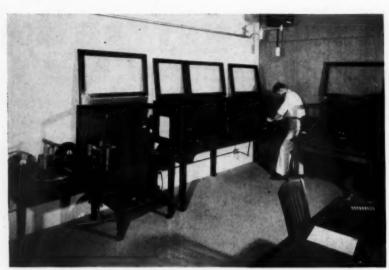
#### Individual research laboratories

The new laboratory contains approximately 10,000 square feet of floor space with ample room for future expansion. The idea of individual research laboratories for the personnel has been carried into the new facilities. The offices and laboratories are constructed of steel and glass-type partitions and open into a center hall of sufficient width to readily facilitate the transportation

Model continuous enameling furnace for the plant control laboratory.



finish APRIL . 1949



Shown here is a section of the new physical laboratory.



Part of experimental rotary smelters for smelting frit.

Shown here is part of "twin section" chemistry laboratory.



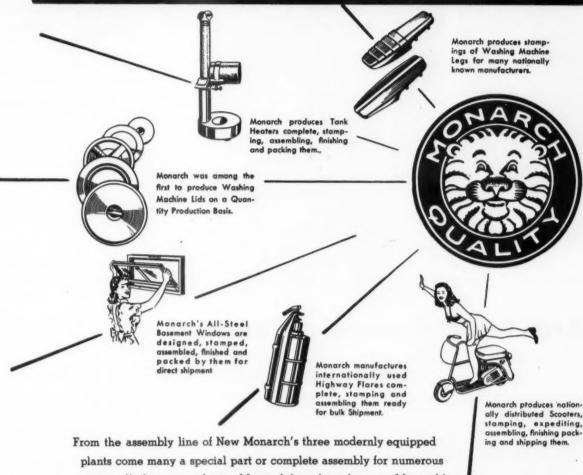
of supplies and equipment to and from the individual laboratories. The laboratory provides offices for the director, assistant directors, and secretary. There are three complete porcelain enamel laboratories, two laboratories for investigation of ceramic bodies and glazes, a glass enamel laboratory, an inorganic color laboratory, physical measurements laboratory, chemistry laboratory, mill room, material weighing and mixing room, and a furnace laboratory. Buildings for dry material storage have been constructed in the rear of the premises.

# Evolution in physical measurement methods

The Physical Measurement Laboratory demonstrates the evolution of porcelain enamel and ceramic research better than any other individual part of the laboratory. Thirty years ago, a porcelain enamel research laboratory consisted chiefly of a smelting furnace (usually a crucible pot furnace or a small boxtype smelter), a small mill rack, spray booth, dryer, and an enamel furnace. This equipment, operating in conjunction with the chemical laboratory, made up the total facilities. Over the years, equipment for measuring the various physical properties of porcelain enamels became necessary so that the laboratories came to include equipment for measuring thermal expansion, reflectance, impact resistance, torsion resistance, and the like. Metallographic equipment for studying defects proved valuable, as did the petrographic microscope. This equipment is obviously designed for studying the end product so that, in spite of the innovations, methods of development remained fundamentally unchanged.

Such research was quite productive as is witnessed by the phenomenal growth of the industry as well as the constant improvement of the product. The post-war years, however, have brought with them a combination of problems requiring for their solution enamels of types not previously available. Further, the time required for their development is limited. It is, therefore, obvious

# MONARCH Serves Many in the field of Stampings-Assembly Finishing and Packaging . . .



From the assembly line of New Monarch's three modernly equipped plants come many a special part or complete assembly for numerous nationally known products. Many of these have been on Monarch's production line for most of the company's 37 years in the field of Designing, Die Making, Stamping, Finishing, Assembling and Packing.

Every day, more and more manufacturers are availing themselves of Monarch's Complete From-Blueprint-To-Shipping-Carton Service.

You, too, can profit by adding our facilities and experience to your own. It always pays. Write Today.



When you think of Stampings, think of NEW MONARCH MACHINE & STAMPING CO. 406 S. W. NINTH STREET DES MOINES 9, IOWA



A N effective means of keeping well within the sales of any retailing field is by maintaining an attractive, customer-pulling building.

Evidently looking forward to the buyers' market, a large number of automotive dealers have actively lined their business establishments — and (with remarkable foresight) many of them have chosen architectural porcelain enamel to do the job.

Enameling and installation of porcelain enamel panels on the automotive establishments shown on these two pages was done by Wolverine Porcelain Enameling Company, Detroit, Michigan. The photographs were furnished by Wolverine Porcelain Enameling Company.

# Architectural porcelain enamel

used by auto dealers to attract customers

The light weight, economy, and versatility of porcelain enamel panels ideally suit them for use in remodeling old buildings. Extensive wall preparation is usually unnecessary and provision of structural support is reduced to a minimum. Porcelain enamel is unaffected by grease and fumes frequently encountered in automotive establishments.





Color, texture, and clean cut modern lines can be combined in porcelain enamel to provide salesgetting eye-appeal, and at the same time maintain the simplicity and dignity which denote an established, dependable enterprise. Porcelain enamel answers the maintenance problem by reducing it to occasional soap and water washings.



The cleanability and fireproof quality of porcelain enamel panels make them highly desirable for interior as well as exterior wall surfaces. The pleasing permanent colors obtainable are effective morale builders as well as sales builders, helping to set a keynote of efficient, up-to-date customer service.





CHICAGO VITREOUS ENAMEL PRODUCT CO., Cicero, Illinois. Exclusive representative for the Enamel Industry

# **Correct milling methods**

#### for wet grinding porcelain enamels

By Roger L. Fellows . ASSISTANT DIRECTOR OF RESEARCH, CHICAGO VITREOUS ENAMEL PRODUCT COMPANY

BALL milling has been found to be the most satisfactory means of grinding, without contamination, the frit and the rest of the mill additions to a suitable fineness and condition for application of the enamel to the ware. To obtain enamel with the proper fineness, desired set and specific gravity and have it ready for the enamel shop when required makes careful control of the milling operation necessary.

Although in milling enamel, many factors can be considered constant from one mill to the next, there is always some change in the conditions taking place that requires periodic changes in the operation of a mill. In most cases, the speed of the mill may be considered as constant, but with belt-driven mills this may vary considerably due to slippage of the belts, while variation in the current may also change the speed of direct driven mills. Revolution counters are helpful in checking mill operation, especially when such variations occur. Although the speed at which a mill revolves is not a factor in obtaining enamel of uniform consistency, it does affect the efficiency of the operation. Normally the slower the mill revolves, the longer it takes to grind enamel with the other conditions remaining constant. The mill speeds as published in the booklet on ball milling are recommended, but it is possible to grind enamels satisfactorily with mills operating at other speeds.

Although the inside diameter of the ball mill is practically identical from one charge to another, the lining is gradually wearing. It may require several months to wear \mathbb{I}" of lining in a mill, but this wear in a 4' x 5' mill will increase the volume about 25 gallons. For this reason, as the inside volume of the mill becomes

larger, more balls are required to keep the mill loaded with the proper amount of balls. To compensate for the lining wear, the milling time may be decreased or the frit charge may be increased. These two variables along with the fact that the proportion of ball sizes has changed makes it impossible to always mill with identical conditions. For this reason, it is necessary to use common sense along with any control methods that may be set up.

#### Correct ball charge

It has been found that the most uniform grinding times and best efficiency are obtained when the ball charge is maintained at 50 to 55% of the volume of the mill. This can be done by adding balls to the mill from time to time, but better results are obtained by adding some balls along with each mill charge. Usually 5 to 10 lbs. of balls are required for each 1000 lbs. of frit ground and this should take care of the wear of the balls as well as the increase in volume of the mill.

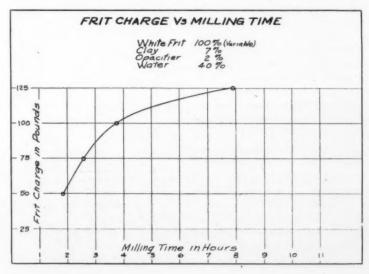
Little information is available on

the proper proportioning of ball sizes, but it is the consensus that balls of various sizes of 1" diameter and larger should be used to secure the most satisfactory enamel and best efficiency in milling. It has been found that a 2" ball is of sufficient size to properly crush and grind commercial frits that are available today. Larger balls may be required for breaking up poorly quenched and tougher frit particles. . . . However, there is the disadvantage of the use of large balls, in that they decrease the milling time and often do not wear evenly. They also may be softer in the center and wear more rapidly as they become smaller.

The amount of frit charged in a mill has a great effect on the grinding time and the grinding time may be governed by the amount of frit charged. However, it is not advisable to reduce the frit charge to the point that the mill pounds in the grinding operation:

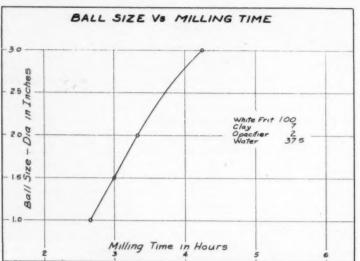
#### How to load the mill

The frit, mill additions and water should be weighed carefully for most



efficient operation. In adding the materials to the mill, it is recommended that some frit be added first to the mill, then the clay, electrolytes, coloring oxides, opacifiers, etc., and then the balance of the frit. This insures

One variable which should be controlled, but is rather difficult to control accurately, is the amount of enamel that is left in the mill between charges. All enamel possible should be removed to prevent excess milling amel. Water cooling of mills is recommended especially in hot weather. This may be accomplished by allowing several small streams of water to flow from a perforated pipe above the



a thorough mixing of the materials and less chance of the clay, etc., adhering to the door opening. The amount of water added should be sufficient to produce a slip of the desired specific gravity. For production mills, the water should be measured to an accuracy of 1 lb.

Many plants have found it advisable to use de-ionized water for charging their mills and thus eliminate one of the possible variables in mill room practice.

#### Effects of enamel consistency

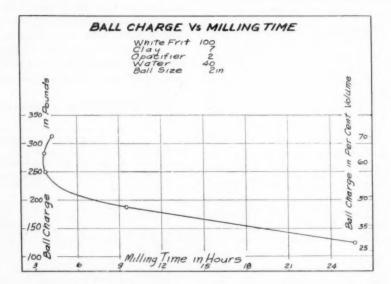
The water content and set of the enamel will have a marked effect on the milling time and final results. For the most satisfactory milling conditions, the enamel should have the consistency of heavy cream. If the enamel is too thick, the mill will usually heat, while if too thin, the milling time will increase and the frit will often not be ground uniformly. The set of enamels can be controlled by additions of proper electrolytes, but sometimes it has been found advantageous to omit some of the water soluble electrolytes from the mill and add them after milling, in order to make it easier to remove the enamel from the mill with the desired specific gravity.

of enamel left in the mill, as well as to reduce the milling time. The same amount of enamel should be removed after each milling, and it is advisable to add a small amount of water to the mill, and then rock the mill to aid

#### How to prevent contamination

Separate mills are recommended for the various types of enamels: ground coat, white, acid resisting, cast iron, colors, etc. When this is not possible and changes are made from one type of enamel to another, a thorough washing of the mill is necessary to prevent contamination. This should include dumping the balls to remove any frit particles that may be in the mill. To make certain that the next enamel will not be contaminated, the mill should be loaded with the same frit or reclaimed enamel that is to be milled and run for several hours. The enamel should be dumped and the mill again thoroughly washed.

Periodically, the mills should be washed and the balls dumped and the lining and covers inspected for exposed iron and ascertain the need of it being relined. At that time, broken balls and those less than 1" in diameter are discarded and when reloading,



in removing the last of the enamel. Failure to control this will usually cause considerable variation in the milling time.

Heating of the enamel from the milling operations often has a detrimental effect on the "set" of the enthe volume of balls returned to 50 to 55% of the mill volume. The inspection should be carried out monthly or after approximately 50 charges. A definite time for this should be established and adhered to.

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#### THIS PRESSURE FEED TANK-TYPE OMP

SPECIALLY DESIGNED AND BUILT FOR THE CERAMIC INDUSTRY

DELIVERS PERFECTLY MIXED, CLEAN MATERIAL TO THE GUN

> • Here's a Pressure Feed Tank that will not contaminate your vitreous finishing materials That means fewer production delays . . . fewer rejects. The result? Greater production . . . lower costs. Finished products that look better . . . possess greater sales appeal.

Many unusual features have made this DeVilbiss tank standard equipment in ceramic plants everywhere. They represent the difference between ordinary tanks and DeVilbiss improved tanks that are built specifically for ceramic materials. Here's your assurance of extra long life, minimum maintenance attention and continuous, efficient delivery of spray materials to the gun.

On everything from guns to spray booths -DeVilbiss Ceramic Spray Systems have special protective features that guard against severe abrasive wear. The result is higher spraying efficiency, longer service, lower maintenance cost and fewer production shutdowns. It will pay you to talk to your DeVilbiss engineer whenever you need spray equipment.

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SPRAY EQUIPMENT AIR COMPRESSORS HOSE & CONNECTIONS



Lest: Lee Honeywell, Geuder, Paeschke & Frey.

Below: J. A. Rol-

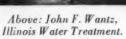
lins & Tom Stoneburner, McCray.



Right: H.S. Willson, Paasche Airbrush.



Below: Dave Mathews & Carl Forster, Hotpoint.





# SNAPSHOTS of CHICAGO ENAMELERS



finishfotos



Above: A. Indermuehle, Malleable Iron Range.



Above: Leo Goldberg and Ray Gutman, Porcelain Enamel Finishers.



Above: Floyd Bailey, A. O. Smith Corp.





Left: Robert Kroc, The Fahralloy Co.



Right: Thor Nelson, Ingersoll Steel.



#### Reports on enamelers club meetings

THE reports of the Eastern and Chicago District Enamelers Club meetings are presented on this page.

On the following page is an account of the Pacific Coast Enamelers Club meeting at which Edward Mackasek, managing director of the Porcelain Enamel Institute, discussed various phases of PEI activity.

#### Eastern enamelers tour Baltimore plants

MORE than 130 executives and key men of various porcelain enameling plants on the East Coast met in Baltimore, Saturday, February 19, for the second of four meetings planned for the 1949 season by the Eastern Enamelers Club.

The group assembled at the Lord Baltimore Hotel, and at 12:30 p.m. left by bus for a tour of the recently completed Ceramic Research and Development Laboratories of Pemco Corporation, on Greenmount Avenue. Feature attractions at the Pemco Laboratories were the spectrophotometer, the spectrograph, and other new machines used for determining the physical property measurements of porcelain enamels, glazes, colors and chemicals used in the ceramic industry.

After the laboratory tour, the group traveled by bus to Pemco's main plant, on Eastern Avenue, and were conducted on a tour of that plant. They were shown, in addition to every phase of Pemco's production, the Pemco continuous smelters for smelting enamel and ceramic

finishes. The tours of the laboratories and the plant were climaxed talked about rotary speed fork. The group was conducted on this tour by



In the Weiskittel plant, members of the Eastern Club viewed that company's much talked about rotary speed fork.

by an old fashioned oyster roast in the firm's cafeteria.

Following the oyster roast, many of the enamelers left for the Harry Weiskittel plant, on Pulaski Highway, to view that company's much William Paul, superintendent of the Weiskittel plant and inventor of the speed fork.

For a description of Pemco's laboratories, see G. H. Spencer-Strong's article on page 37.

#### Chicago enamelers discuss research tools and milling methods

A N even hundred members attended the first 1949 meeting of the Chicago District Enamelers Club, February 26, at the LaSalle Hotel.

At the business meeting, President Jerry Hofstetter, of Ferro, appointed Rudyard Porter, of Carnegie-Illinois, and Bud Friedman, of Chi Vit, to plan the Club's annual Maypole Party. Then the following slate of new officers, recommended by the nominating Committee consisting of George Arras, of Quadrangle, Ralph Foraker, of Pemco, and Bud Friedman, was unanimously elected to serve for

the current year:

President, Ed Bolin, of Chi Vit; Vice President, Fred Petersen, of University of Illinois; Secretary-Treasurer, Jerry Svec, of Ceramic Industry; Assistant Secretary-Treasurer, Marcel Pouilly, of DeVilbiss.

Dr. A. I. Andrews, head of the Department of Ceramic Engineering, U. of I., then discussed "Enamelers' Research Tools." Dr. Andrews used some 25 slides to illustrate the latest equipment available for research in the enameling industry. Some of the research tools illustrated were: elec-

tric thickness gauge, scratch and gouge instrument, impact machine for kitchenware, solubility apparatus, various reflectometers, color analyzer, color comparator, specific heat apparatus, electronic microscope, determination of infra-red, thermal analysis, and equipment for detecting small cracks.

The program was closed with a paper on "Proper Control in the Milling of Porcelain Enamel," by R. L. Fellows, assistant director of research, Chicago Vitreous Enamel Product Co. (See page 43.)

# Pacific Coast enamelers

#### discuss PEI activities

### By Malden Grange Bishop . CORRESPONDENT

MEMBERS of the Pacific Coast Enamelers Club welcomed two prominent members of the porcelain enameling industry from the east to their regular meeting at the Rodger Young Auditorium, on Friday, February 18. They were Dr. A. I. Andrews, of the University of Illinois, and Edward Mackasek, managing director of the Porcelain Enamel Institute.

After a couple of hours of "western hospitality," which included thick slabs of roast prime rib, Al Sattler, of U. S. Porcelain Enamel, Club president, introduced Dr. Andrews, who confessed that he had prolonged his stay in Southern California because of his interest in the developments on the Pacific Coast, and because he loved the sunshine.

President Sattler than presented Mr. Mackasek who held the thoughtful attention of Club members for more than an hour as he described the work of the Porcelain Enamel Institute.

Describing PEI as a trade association, Mackasek said that the function of any trade association was to protect the interests of its industry and to increase its general welfare through better public service. He underlined the word "public."

Basically, there are two areas in which the trade association may operate. One is the external-the concentration on a wider recognition of the industry's products. The other is the internal-the raising of the general level of the industry's efficiency. PEI has devoted, for the most part, its effort in the internal area. The great prosperity of porcelain enamel in the last two decades has been brought about by developing better steels, compounding finer and newer enamels, and modernizing and speeding up production processes, all of which have resulted in lower-cost products of greater beauty, durability, and service.

By promoting high quality of products, and high standards of ethics, a trade association strengthens the confidence of the buyers of the industry's products. Mackasek quoted one of the largest eastern buyers of porcelain enamel as recently stating: "If you want to tell me how good your finish is, you'd better do it through your association. I'll believe what it says, but if you, as an individual, tell me the same story, I must always have the mental reservation that no matter how sincere I think you are, you are still out plugging for yourself."

Although the porcelain enameling industry has enjoyed a non-competitive position in most of its established fields, it no longer has an assurance of the continuation of that position, Mackasek reminded his listeners. Other finishes are making inroads. In the present constantly changing economic picture, no industry can be certain of its markets tomorrow. Speaking at a recent Sales and Management Conference, R. J. Bond, manager of the stove division of Montgomery Ward, said this, in reference to a survey he had made: "All of this indicates that porcelain enamel has a very important place in the finishing field of household appliances, but the main point I want to make is that the position is a very vulnerable one!"

Pointing out that cooperation within an industry was vital to its health, Mackasek likened the forward movement of an industry to that of an army. Although individual units may dash far ahead, their gain could only be momentary unless the whole line moves forward. "The welfare of every industry," he stated, "is the algebraic sum of the plus and minus quantities contributed by the component parts."

Calling attention to the many fine pieces of important reference materials which have come from the ten Forums sponsored by PEI at the University of Illinois and Ohio State University, the speaker went on to outline briefly the important work done and being done by the special committees of PEI.

#### **Product standardization**

When the Product Standardization Committee was first established, in 1936, there was very little of a scientific nature in porcelain enamel formulating and no methods of accurately testing and checking its properties. Calling on the outstanding technical men of the industry - such as Hansen, McIntyre and Bryant of Ferro, Spencer-Strong of Pemco, Sweely and Fellows of Chi Vit, Marbaker of O. Hommel, Scripture and Hutchinson of Ing-Rich, Danielson of Metal & Thermit, and many, many others - a long list of accomplishments have been recorded. The development of the adherence meter, methods of testing acid resistance, surface abrasion, and gouging, were listed among others. The publication of the "Handbook on Design and Fabrication of Sheet Metal Parts," and "Ball Mill Wet Grinding," and other bulletins have contributed to the knowledge of everyone, and has made possible the developments of finer products and the widening of the fields of application of porcelain enamel.

#### Market development

One of the greatest needs today of the porcelain enameling industry is publicity, Mackasek believes. While porcelain enamel has remained immodestly modest in the background, glass, plastics, and bright metals have leaped into the spotlight, and by sheer weight of their publicity gained a place out of proportion to their actual performance. This has been porcelain enamel's own fault. The Market Development Committee — with such men as Ray Dadisman of Armco and Bob Myers of Carnegie-Illinois has attacked this situation. Working through its publicity and advertising agency, the Committee has disseminated more full-length technical articles, feature stories, news items, radio comments, and general information than ever before in history. Much more is needed, and Mackasek called



Every day more and more manufacturers are discovering that "Sales Appeal" begins with Colors by Vitro. To keep pace with this increased demand for Vitro Colors, it has been necessary to greatly expand all our facilities within the past year-modern production equipment has been installed, a new reference sample system has been established, our plant has been enlarged, new trained personnel has been added to our staff. It all adds up to a better and more complete color service. Why not find out today what Vitro has to offer you! We're at your service-whatever your color requirements.

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upon every individual and company in the industry to work with PEI in its publicity promotions.

#### Commercial research

With current markets shrinking with general business decline, and with dangerous competition looming, the porcelain enameling industry must intensively cultivate all old markets, and must investigate all potential new markets. Headed by F. C. Woleslagle,

of Carnegie-Illinois, the new Commercial Research Committee is digging into the situation for factual data which will guide our manufacturers in making sound decisions in the future.

#### Packaging and shipping

Describing the current work of the Packaging and Shipping Committee as one of the most important, Mackasek went into great detail to explain the work and objectives. This program was also reported in *finish* for January and February, 1949, and will continue to be covered in future issues.

After answering many questions from the floor, Mackasek was thanked by President Sattler, who then adjourned the meeting so that Club members could watch a demonstration of the adherence meter by Ed Hansen.

#### Enameling irons—availability, developments, suggestions

#### a report by PEI process development committee

THE picture for the next few months for flat rolled products, in general, is not encouraging. Demand seems to increase constantly while the increase in production, though steady, is not gaining upon the increase in demand.

The situation in regard to enameling irons is even less encouraging. Production of enameling iron, with its high purity, requiring raw materials and fuels that are difficult to obtain today, and extra time in the open hearth, as well as special rolling problems, entails a loss of tonnage. In addition to this loss in production, in some mills, due to the special treatment and raw materials required by enameling irons, they are even less profitable to make than cold rolled steel. As a result of these factors, some mills have gone entirely out of enameling iron business. Others are producing at a reduced rate, while a few are either holding their own or perhaps increasing slightly. Further, the purchase by manufacturers of steel products of several mills formerly producing enameling iron has reduced the total amount of this material available. There is no prospect for an early change in this situation as far as we can see.

#### New developments

A number of the steel mills are working on new types of enameling irons or steels; however, due to the general shortage of flat rolled capacity, no large production can be anticipated for some time on these new materials although two are now on the market in limited quantities.

Due to the limited availability of these new materials, as well as the

#### Editor's Note:

The accompanying brief article represents a report on enameling irons prepared under the sponsorship of the Process Development Committee of the Porcelain Enamel Institute by Mr. I. Whitehouse, of Republic Steel Corp., and Mr. F. R. Porter, of Inland Steel Company. It will be interesting to observe the effect of present process.

It will be interesting to observe the effect of present production rates among the producers of major appliances and other important users of sheet steel upon the steel situation as outlined in this report.

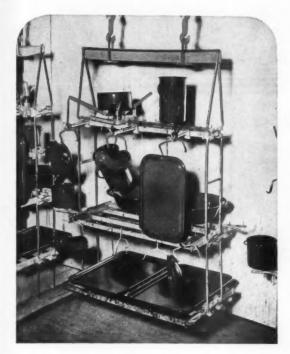
Porcelain enamel processing has taken two roads. One is an effort to get more highly developed special enameling irons for highest quality results, the other is an attempt to meet requirements for processing hot and cold rolled steel through the use of special frits or special processing methods in the porcelain enameling plant. It will be interesting to observe which of these trends accelerates more rapidly should sheet steel become more readily available.

conventional enameling iron, enamelers will be forced, as they have in the past, to use a considerable quantity of hot and cold rolled steel.

# Suggestions for the use of hot and cold rolled steel

1. When ordering, mention that the material is to be used for vitreous enameling. (Specify that the sheets are to be shipped "dry," not oiled, as the oil used in the mills is extremely difficult to remove prior to pickling.)

- Consult with your supplier when using hot rolled annealed material because the processing used by some mills leaves a scale that is extremely difficult to remove.
- 3. In processing, the usual steps of cleaning and pickling should be followed. Thoroughness of cleaning and pickling cannot be overemphasized. In our opinion, all hot rolled articles and cold rolled articles should be nickel flashed with a heavier than normal coat. In firing, special care should be used to so support the ware that sag and warp are minimized.
- 4. Since greater sag and warp can be expected with steel as compared to enameling iron, attention should be given to those factors which will reduce these tendencies.
  - a. A heavier gauge may be used.
  - The part may be so proportioned, or braced, or supported that warpage is decreased.
  - c. The shape or geometry of the ware may help. For example, in hollow ware.
  - d. In general, deep drawing seems to be of considerable assistance in retaining shape during firing.
  - e. Where possible, use for one-coat work, for example, oven linings, where the part can be fixed into correct shape or position without enamel breakage due to the relatively thin coating of enamel used.



WITH UNITED STATES STAMPING COMPANY, TOO...IT'S INCONEL FOR BURNING TOOLS

These Inconel fixtures were fabricated for their own use by the United States Stamping Company of Moundsville, W. Va.

Inconel was chosen because of its lighter weight, non-scaling properties, and ease of plant fabrication. Approximately 10,000 pounds of Inconel flats, tubing, rod, and sheet were used to equip one furnace.

# How non-spalling, lightweight burning tools cut costs

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Less spoilage of enameled ware and greater life of equipment result from the tightly adherent oxide which develops on Inconel. Spalling and flaking are held to the minimum.

Fuel costs are lowered because Inconel's strength at elevated temperatures permits design of thin section, lightweight tools.

Inconel is ductile and readily fabricated. Inconel welded joints are as strong and heat-resistant as the alloy itself. Your design staff will be happy to learn that Inconel is available in all standard mill forms... flats, sheet, rod, tubing, strip, wire, and fastenings.

Write for names of fabricators near your plant. Or, if you prefer to build your own installations, remember that our Technical Service Department is always ready to help with your metal selection and fabrication problems.

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These are screened in one or more colors. The equipment can be quickly

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Your trade mark or name design is permanently applied directly to a prominent spot on your product.

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Perkins to Porcelain Specialties

It is reported that John E. Perkins, formerly erection superintendent for the architectural porcelain enamel division of Erie Enameling Co., Erie, Penn., is now associated with Porcelain Enamel Specialties Co., Baltimore, Md. Porcelain Enamel Specialties designs and erects architectural porcelain enamel for all types of structures.

S. W. Corbin has been appointed assistant manager of the industrial divisions of General Electric's apparatus department, according to an announcement by K. H. Runkle, divisions manager.

#### **Roberts Brass appointment**

The Roberts Brass Mfg. Co. has announced the appointment of Frank E. Hangosky as sales manager to succeed F. W. Schmidt who will devote more time to his duties as secretary. The announcement was made by L. C. Smith, Jr., president.

# Wyandotte Chemicals plan expansion

Wyandotte Chemicals Corporation, Wyandotte, Mich., recently acquired approximately 200 acres of land at Dilles Bottom, Ohio, ten miles south of Wheeling, W. Va. Included in the property is a 2300-foot frontage on the Ohio River. Although no immediate construction is contemplated, it was stated that the new site was acquired for future additions to the

firm's organic chemical facilities, and for expansion of its electrolytic chlorine and caustic soda plants.

#### "Chuck" Longfield dies



Charles H. (Chuck) Longfield, vice president and general sales manager for The Youngstown Sheet and Tube Company, died March 6, in Belleair, Fla., while on a brief vacation.

Longfield joined Youngstown Sheet and Tube in October, 1932, as general manager of sales, and last April was elected a vice president. A week after Pearl Harbor, he was called to Washington, D. C., to help organize the steel division of the War Production Board. He was named chairman of the production directive committee which directed activities of the entire steel industry in regard to the amount of tonnage, type of production, and distribution.

He was a member of the American Iron and Steel Institute, Youngstown Club, Youngstown Chamber of Commerce and numerous organizations associated with the steel industry.

#### Harbison-Walker official dies

Hugh S. Robertson, a director and vice president of Harbison-Walker Refractories Co., died February 21, while vacationing in Guatemala. He had been with Harbison-Walker since 1916.

#### Merchandise Mart appoints sales promotion manager

The appointment of Robert B. Johnson as sales promotion manager of The Merchandise Mart, Chicago, was announced by Wallace O. Ollman, general manager. Johnson's duties consist of directing all promotional activities for the Mart, including markets, advertising, publicity, and public relations. He formerly was director of public relations for Marshall Field & Co., Chicago.

#### AMA exposition to stress better packaging & packing

Lower production costs and a greater stimulus to sales in a buyers' market as a result of increasing management emphasis on improved methods of industrial and consumer packaging, packing, and shipping will be stressed at the 18th National Packaging Exposition, in Atlantic City, May 10, 11, 12, and 13. The Exposition is sponsored by the American Management Association.

#### PMI first national conference in Cleveland, July 21-22

The Pressed Metal Institute has announced that its first national conference, will be held at Hotel Cleveland, Cleveland, Ohio, July 21 and 22. The PMI board of trustees and management staff are currently preparing an enlarged short term and long range program which will be developed in detail for presentation at the conference.

Founded in 1943, PMI today represents more than 200 metal stampers in the United States. The Insti-

tute recently moved its offices, in Cleveland, to 13210 Shaker Square.

#### Honeywell acquiring valve firm

Minneapolis-Honeywell Regulator Co. has announced that it has entered an agreement for the acquisition of the assets of H. Belfield Co., manufacturers of control valves. Harold W. Sweatt, Honeywell president, said that Howard L. Murray, president of Belfield, would be elected a vice president of Minneapolis-Honeywell and would be in charge of the new acquisition to be known as the Belfield Valve Division. Company; A. B. Ritzenthaler, Tappan Stove Company ("CP" promotion plans); Leland Feigel and Stanley C. Gorman ("Court of Flame" gas water heater promotion), and other important key men in the gas appliance industry.

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It seems logical that the high advance registration may be attributed in part to two factors: (1) the importance of current planning with relation to the future of the gas appliance manufacturing business, and (2) the unusual recreational facilities afforded by holding the meeting at Colorado Springs. One feature of entertainment will be the national figure skating championships which will be held at the Broadmoor Ice Palace during the GAMA meeting.

#### GAMA goes west for annual meeting

The annual meeting of the Gas Appliance Manufacturers Association will be held April 5, 6 and 7, at the Broadmoor Hotel, Colorado Springs, Colorado. Topics for consideration will include the state of the trade nationally, what's ahead for the rest of 1949, selling in a buyer's market, and other industry issues facing the manufacturing industry. According to Frank J. Nugent, president of the Association, the 535 manufacturers in the GAMA group will cover thoroughly the merchandising plans of the various divisions.

According to H. Leigh Whitelaw, managing director of GAMA, early advance reservations for the Colorado Springs conclave are far ahead of the total final registration of any previous meeting.

In reviewing the program, Harold Massey, assistant managing director, stated that it will be the most timely, specific and pertinent ever arranged for the Association. In addition to speakers of national importance for general sessions, each of GAMA's 12 divisions will hold meetings to discuss major topics of vital importance to their respective groups. General sessions will be combined with luncheon meetings and afternoon sessions will be devoted to divisional meetings.

Included on the speakers' list are Frank C. Smith, vice chairman of the American Gas Association Sales Promotion Committee and president of the Houston Natural Gas Company; Robert W. Hendee, president of the American Gas Association and president of the Colorado Interstate Natural Gas Company; George H. Richards, legal counsel for GAMA; R. T. Killian, chairman of the Marketing Committee and manager of Marketing Division and Research

Department of the Bryant Heater Co.; and Charles G. Warwick, chairman of the Traffic Committee, and traffic manager of the Rheem Manufacturing Company.

Others participating in the program will be John A. Robertshaw, of Robertshaw-Fulton Controls, Inc.; John Van Norden, of American Meter

# Davidson Enamel Products expanding activities on porcelain enamel for architectural use



Architectural porcelain enamel (5000 sq. ft.) for this department store which was opened in Lima, O., March 1, was furnished by Davidson Enamel. Architect was McLaughlin & Keil; building contractor, H. U. Tuttle.

A report from R. J. DeVoe, executive vice president of Davidson Enamel Products, Inc., Lima, Ohio, indicates increased activity in their architectural porcelain enamel division, and includes a listing of the newly elected officers of the company.

Those who have been elected to head this old and well established porcelain enamel "jobbing" plant are: L. W. Ecke, president; R. J. DeVoe, executive vice president and treasurer; Harry R. Meredith, secretary, A. C. Weierich, vice president, architectural division; John W. Timmermeister, assistant secretary and treasurer; and W. J. Behrens, comptroller.

DeVoe reports that ground will be

broken sometime within the next few weeks (probably by the time this reaches the presses) for a building which will greatly increase the size of the company's fabrication facilities. One of the reasons for this expansion lies in the bright prospects for increased use for architectural porcelain enamel, which the company produces. Prospects for the year are indicated as being very bright in this field, and the company is laying plans for the expansion of its activity, including a material increase in the amount of information and material to be furnished to architects and other key men in the building field.

#### General Box elects officers

Edward Wagner, president of W. T. Wagner's Sons Co. of Cincinnati, was elected a director of General Box Company at the annual meeting of stockholders. The company also elected four vice presidents: F. J. McCraw, of East St. Louis, Ill.; H. B. O'Donnell, of Brooklyn, N. Y.; T. W. Regan, of Winchendon, Mass.; and George T. Walne, of Chicago. All have been with the company for a number of years.

McCraw is district manager in charge of the East St. Louis plant. Regan is district manager in charge of the Winchendon plant and the New England sales area. O'Donnell is manager of the Brooklyn plant and eastern sales manager. Walne is manager of the Chicago sales area.

#### Organize association of water softener manufacturers

With the adoption of a constitution and by-laws and election of officers, the National Association of Water Conditioning Equipment Manufacturers was formally organized at a meeting at the Sherman Hotel, Chicago, February 18.

Fifty-three manufacturers signified their intention to join the new group, which was formed for the purpose of developing the market for water conditioning equipment.

Fred V. Hayner, president of Shepley-Hayner Corp., Freeport, Ill., was elected president of the Association, and R. B. Baird, of The Duro Company, Dayton, Ohio, elected vice president. Secretary-treasurer of the group is Herbert C. Angster, who is also secretary and director of the National Association of Domestic and Farm Pump Manufacturers.

Elected to the Association's executive committee were: Charles E. Russell, Elgin Softener Corp., Elgin, Ill., chairman; Harold S. Werhane, Culligan Zeolite Co., Northbrook, Ill.; Herbert Wolcott, Wolcott Water Softeners, Columbia, Mo.; Earl C. Reynolds, Reynolds-Shaffer Co., Detroit; and Lynn G. Lindsay, The Lindsay Company, St. Paul.

The address of the newly-organized National Association of Water Conditioning Equipment Manufacturers is 39 South LaSalle Street, Chicago 3, Ill.

#### Despatch Oven advances Larsen



Appointment of Ray S. Larsen as sales manager of Despatch Oven Company has been announced by George M. Lund, president of the firm. Larsen joined Despatch in 1937 as a sales engineer. Following two years of military service, he rejoined the company in 1944 to take care of standard costs and methods engineering. In his new position, Larsen will be in charge of sales of such industrial equipment as finishing systems, washers, spray booths, foundry ovens, and industrial heat treating equipment.

# Wirebound Box Association holds annual meeting

At the annual meeting of the Wirebound Box Manufacturers Association, February 22 and 23, in New Orleans, D. R. Simmons wes reelected president. Simmons is an official of Elberta Crate and Box Co., Bainbridge, Ga.

John R. Miller, of T. R. Miller Mill Co., Brewton, Ala., was named vice president. L. S. Beale, of Chicago, continues as secretary-treasurer.

L. O. Crosby, Jr., of Goodyear Yellow Pine Co., Picayune, Miss., was elected to the Association's board of directors. All other members of the board, except the two one-year "rotating members," were reelected. The new rotating members are S. D. Slaughter, of Muskogee, Okla., and Foster L. Martin, of Clarksburg, W. Va.

Board members reelected are: A. L. Whiton, Chicago; J. B. Adkins, Gainesville, Fla.; E. S. Barnhill, Indianapolis; S. C. Craven, San Francisco; N. W. Embry, Chicago; D. R. Gooding, Wausau, Wis.; F. J. Martin, Jr., Toledo; R. F. Miles, Chicago; D. R. Simmons, and J. R. Miller.

#### PEI names assistant director



John C. Oliver, formerly of Cleveland, Ohio, has been appointed assistant to the managing director of the Porcelain Enamel Institute, it has been announced by Edward Mackas-



# TAKEN BY SUPPRISE?

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# Mot if you use dependable, plant-tested PORCELFRIT

No spotty, uneven results with plant-tested PORCEL-FRIT! The surprises are worked out before this finer frit reaches you. Part of that is because of exhaustive laboratory experiments . . . and the rest because we use PORCELFRIT right in our own job-enameling plant, under conditions of actual manufacture. That way we know PORCELFRIT is right before you get it. Guard against unpleasant surprises by sticking to plant-tested PORCELFRIT.

INGRAM-RICHARDSON MFG. CO., OF INDIANA, INC.
OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA



ek, Institute managing director.

Oliver received a B.S. degree in industrial and personnel management from Ohio State in 1943, when he joined the Armed Forces. At the end of the war he was named field secretary for Delta Tau Delta, representing the fraternity's national headquarters. In this capacity he handled public relations with college officials through-

out the country, and did administrative and supervisory work with college and alumni groups.

Oliver has done additional graduate work since receiving his B.S. degree, attending the Wharton Graduate School at the University of Pennsylvania where he received an M.S. in business administration.

stallation and consequent tying up of the vessel. In addition, it is reported that prior to the use of ceramiccoated mufflers, substantial stocks of replacement mufflers were essential in all parts of the world, both on land and on mother (tender) ships. As a result of the use of the ceramiccoated mufflers, this replacement stock can now be minimized.

Seaporcel Metals reports that more and more naval ship parts are being coated with this type of finish, and that experimentation is continually adding new parts to the list which can be successfully protected by this method.

## Continued service proves porcelain enameled metal useful for naval vessels

(The following news article is based on information officially released by the Security Review Section. Department of The Navy, Office of Public Relations, Washington, D.C.)

Today, when so much is heard and read about the high cost of government, we sometimes hear little of the efforts of industrial organizations who are working with government to provide newer and better products.

Seaporcel Metals, Inc., of Long Island City, New York, have done a great deal of work in adapting their ceramic finish, "Seavorcel" to both shipboard and undersea uses where resistance to corrosion is extremely important. In the February, 1945, issue of finish, under the title "Porcelain Enamel Goes to Sea." the use of this ceramic finish as a coating for non-structural bulkheads on hosnital ships was described in detail. In the February, 1946, issue of finish, under the title of "Porcelain Enamel Goes Under the Sea," the use of the coating as a protection for mufflers on submarines and other naval vessels was described. Ceramic finishes have also been used for other items, such as incinerator uptakes, sanitary ware,

Now that this type of finish has been in use for a number of years, it is interesting to review information on the service life of the ceramic-coated parts.

As for the submarine mufflers, it is reported that "no replacements as yet have been necessary, even though some of these mufflers have seen several years service." In this connection, the ceramic coating has proved its ability to protect the mufflers against the ravages of corrosion, erosion, acid fumes and thermal shock, thus providing long

life and freedom from maintenance. As can be seen, this not only saves the cost of the replacement muffler itself, but the substantial cost of in-

#### New managing director of PMI



The appointment of Orrin B. Werntz as managing director and counsel of Pressed Metal Institute was announced by Walter A. Gorrell, president of E. J. McAleer Co., and PMI vice president. At the same

time, Gorrell announced that Jerry Singleton, with PMI since 1947, was named assistant manager.

It was stated that Werntz, for the past 11 years executive secretary of National Screw Machine Products Assn. of Cleveland, will continue his duties in that capacity in addition to his new responsibilities with the Institute.

# Seaporcel adds to sign and architectural organization

William Mace Harper is now with Seaporcel Metals, Inc., working from the company's office at 620 G. Daniel Baldwin Bldg., Erie, Penn. He was formerly with Erie Enameling Co.

George Spencer, formerly with Baltimore Enamel and Novelty Co. as New York manager, is now connected with Seaporcel as manager of a new quantity sign division.

#### "The Enameled Sheet"

The first issue of *The Enameled Sheet*, new monthly publication of The Petersen Oven Co., of Franklin Park, Ill., and its Division, The Stro-

man Furnace and Engineering Co., was published recently. The company announced that the magazine's purpose is "in the interest of better ac-



quaintance with and better understanding of our company's personnel and products."

#### Tank lining plant in operation

The new tank lining plant which The B. F. Goodrich Co. has established in Tuscaloosa, Ala., adjacent to its tire manufacturing plant, is now in operation, and offers advantages to users of rubber linings in the south, the company says. The new plant will bring to southern consumers freight savings, faster deliveries and proximity to major suppliers of steel tanks, it was stated.

#### of clays and other mill additions, Other subjects included the use of color oxides, clays, physical testing, control of dipping and spraying line, control of dryers and furnaces, and a discussion of the new low temperature and direct-to-steel enamels. The graduates were: C. F. Bauman,

#### Thirty ceramic graduates at U. of I.



The Department of Ceramic Engineering at the University of Illinois will graduate thirty men this year. Four of the students were graduated with the fall class on February 6, twenty-five are scheduled for spring graduation, and one for the end of the summer term.

The 1949 graduating class shown in the photo are as follows:

Front row: Herman R. Klockner, James C. Davis, Charles L. Fillmore, Charles C. Curtis, Jr., Richard N. Ames, Albert H. Siska, LaVoy H. Schneider, and Donald D. Rassner.

Center row: Stanley F. Paspy, Jr., Wes-ley C. Lueking, Robert D. Fenity, Harland P. Tripp, Ralph G. Kraft, Henry W. Rapp, Jr., Charles E. Janke, Norman K. Russel, and Bob G. Bender.

Back row: Don P. McAdoo, Chun Lee, Gerald Lutz, John W. Thiemann, Lynn E. Fussell, Roger L. Fellows, Jr., Robert S. Degenkolb, and Martin Berg, Jr.

#### talled 177,900 units, compared to 183,700 in December, according to industry-wide figures reported by the

#### PEI sales management conference scheduled for June

The graduates were: C. F. Bauman, Nashville; J. R. Bingesser, St. Louis; Chancey Boyce, Greenville, Mich.; H. R. Caton, West Lafayette, Ohio; A. E. Fernandez-Davila, Lima, Peru; G. E. DiGeronimo, Cleveland; T. C. Dvornik, Chicago; G. M. English, Cleveland; E. S. Finch, Baltimore; R. H. Greene, Cleveland; John Heinz, Arthur Liesch

R. H. Greene, Cleveland; John Heinz, Ar-thur Hirsch and Howard Hirsch, all of Maspeth, L. I., N. Y.; Jean H. Leopold, Pfoffenhoffen, France; P. E. Maki, She-boygan, Wis.; Wm. Pavia, Waltham, Mass.; R. C. Pringle, Chicago; O. H. Shaw, West Lafayette, Ohio; W. C. Vetten, Rotterdam, Helland, L. C. Vellent, Schebovgen, Wis.

H. C. Fringle, Chicago, G. H. Shaw, West Lafayette, Ohio; W. C. Vetten, Rotterdam, Holland; J. C. Vollrath, Sheboygan, Wis.; F. J. Wainscott, Murray, Ky.; and Alfred Wild, Cleveland.

Washer-ironer sales report Factory sales of standard-size household washers in January to-

American Washer and Ironer Manu-

facturers Association. Sales of iron-

ers in January aggregated 28,000,

compared to 26,000 in December,

said the report.

At a meeting of the Porcelain Enamel Institute Sales Management Conference Committee, March 3, at the Stevens Hotel in Chicago, plans were completed for a one-day conference to be held Friday, June 24, at the Carter Hotel, Cleveland, Ohio.

Committee members present at the meeting were: Chairman C. P. Lohman, Pemco; F. L. Meacham, Chicago Vit; Robert C. Myers, Carnegie-Illinois; E. M. Hommel, O. Hommel Co.; O. F. Depperman, Briggs Mfg.; Dana Chase, finish; M. J. Salton, Seaporcel; and J. A. Holcomb, Wolverine Porcelain. Also present at the meeting were C. D. Clawson, Ferro, PEI president; Edward Mackasek, managing director of the Institute; Helen Smith, Walker & Downing; and C. B. Williams, Ferro.

With the new accent on selling for 1949, it is expected that attendance at the June Sales Management Con-

#### Ferro training course graduates 22



The first 1949 session of the Ferro Training Course for process control men graduated 22 "students" at the company's laboratories in Cleveland, March 4. Dr. Frank J. Zvanut, until recently manager of quality control and now manager of the clay division of Ferro Enamel Corporation, was in charge of the two-week course.

Lecture sessions covered prepara-

tion of metals for porcelain enameling, preparation of standard control solutions, nickel dip practice, testing of metal cleaning and pickling solutions. After an examination covering that phase of the course, the students covered the properties and behavior of ground coats, the theory of enamel adherence, properties and behavior of cover coats and the use





which illustrates and describes Advance methods and facilities.

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ference will be much greater than at any preceding conference sponsored by the Institute. Outstanding speakers from sales management circles are being scheduled for the event. The Committee hopes to make the program of such unquestionable value to sales management of the leading producers of major appliances and all other types of products employing porcelain enamel, that they cannot afford to miss the event as it relates to their present day selling problems.

cently with an entry by Joseph Miners, of J. Miners Co., Newark, N. J. Miners marked his entrance into the competition with the sale of a gas water heater of 40-gallon capacity, it was announced by Stanley C. Gorman, sales promotion director of the "Court of Flame" national salesbuilding program.

The contest is being conducted by GAMA, twenty-three manufacturers, and supported by the American Gas Association. It is said to be the most comprehensive sales drive for automatic gas water heaters in the history of the industry. The campaign is aimed at a goal of 1,500,000 units.

The appointment of William A. Schaub as manager of the Denver district and Raymond P. Russell as manager of the Boston district of the industrial products sales department of The B. F. Goodrich Company, has been announced by Chester F. Con-

ner, department manager.

## Glenwood Range "very much in business"

Glenwood Range Co., Taunton, Mass., 70-year-old range manufacturer, has announced plans for the decentralization of production and the future addition of new products bearing the Glenwood name.

William L. Cooper, president, stated that "it has been the plan of the Glenwood management, for some time now, to increase the number of products under the Glenwood name." Cooper went on to say that "our search for new products and additional manufacturing facilities during the past six months revealed superior manufacturing plants in various localities . . . " It was decided to stop the manufacture of ranges in the Taunton plant on June 1. After that date, the most popular models in the Glenwood line will be continued on a decentralized basis. it was stated.

Referring to a recent radio report, Charles W. Merriam. Jr., advertising manager for Glenwood, wrote finish that "We would like to take this occasion to point out that the to Page 69

#### Wyandotte field men hold conference



Field representatives of the J. B. Ford Division of Wyandotte Chemicals Corporation attended a general sales conference, February 21-25, at the Detroit Statler Hotel. On the opening day, 210 Wyandotte men

took a tour of five of the company's ten production units at Wyandotte, Mich., inspected four of the company's lake freighters, and visited the firm's research laboratories, pilot plant and scientific displays.

#### GAMA opens "Court of Flame" contest



Joseph Miners is shown presenting the first gold tag in the "Court of Flame" contest to Edith Frey, contest coordinator.

The "Court of Flame" automatic gas water heater sales contest, sponsored by the Gas Appliance Manufacturers Association. was opened re-

# It's Here! 1450° F

Titanium A. R. White

and

**Ground Coat** 

EXCELLENT COVERAGE — HIGH GLOSS NO WARPAGE — WORKABILITY

SEND FOR your trial run TODAY! Let us prove to you that Titanium A. R. White will work for you at lower production costs.



CENTURY VITREOUS ENAMEL CO., 6641-61 S. Narragansett Ave., Chicago 38, III.

# What industrial trade publication answers this description?

Circulation — completely blankets the multi-billion dollar major appliance and allied metal products market. (Individual copies to key men from top management, through purchasing and engineering, to key plant men.)

Editorial—has averaged over fifty per cent editorial material, compared with advertising, since its inception in 1944. Majority of feature articles are prepared and *signed* by the metal products manufacturing industry's top technical men and practical plant operators.

Business growth dollar receipts from advertising increased over fifty per cent last year (1948 sales over 1947 sales). (Compares with reports for comparable industrial publications showing fractions of one per cent gain.) Watch future issues for the advertising of old friends, plus a fine list of new advertisers for 1949.

Dana Chase PUBLICATIONS

360 NORTH MICHIGAN AVENUE . CHICAGO 1 . ILLINOIS

#### **New Supplies and Equipment**

#### D-21. Pipe selector slide rule



A slide rule for quick and accurate selection of pipe sizes is available at a nominal charge to engineers and operating men from J. O. Ross Engineering Corp. The rule when closed is of pocket size, measuring little more than six inches in length. Graduations are shown in black and red and complete instructions for use of the size selector are printed on the back. It is said to be the only pipe selector slide rule available.

#### D-22. Oven chain lubricators



A modern system of oven chain lubrication which eliminates hand methods of application has been developed by Bel-Ray Company, Inc. It is stated that the system provides a constant quantity and quality of lubricant to the chains at all times. The system consists of three component units. The first and basic ele-

#### **More Information**

For more information on new industrial literature reviewed here, fill out the order form on this page.

ment is a series of high grade lubricants. The second is a chain lubricator which is a drop feed type fitted with hand or motor operated agitator. The third unit is a "lead-in" device for delivering the lubricant to the exact location where it will do the most good.

## D-23. Shield provides all-around face protection



All-around face protection is provided by Jackson's improved face shield type J-1, especially designed for metal finishing, spot gun and flash welding, metal pouring and similar operations. The shield has an 11-inch wide visor, and has wire reinforcements which enable the user to mold the shield to his requirements. It is available from General Scientific Equipment Co.

#### D-24. Aluminum fasteners



A total of 551 kinds of aluminum fasteners are available for immediate shipment from Central Steel & Wire Co. The fasteners are exact duplicates, in aluminum, of practically every kind of metal and wood screw, machine bolt, washer, and nail.

# D-25. Grease-type lubricant has high melting point

A new aluminum-soda base grease, developed by E. F. Houghton & Co., to Page 66 →

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Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

 No.
 No.</td

#### **New industrial literature**

## 401. Precision control of temperature in spray finishing

A folder on "precision control of all essential temperatures for ideal spray finishing — under heat" has been released by The Beck Equipment Co. Included in the folder are details of interior construction of the Dualheet unit which is claimed to automatically heat both atomized air and paint to any desired temperature.

# 402. Steelband tensioners, strapping, and sealers

Features of Steelband tensioners, strapping, sealers and accessories for

#### More Information

For more information on new supplies and equipment reviewed here, fill out the order form on page 63.

banding all types of packages, boxes, pallets, bundles, and bales are contained in a new folder released by the Allegheny Steel Band Company. Both open and closed types of seals are shown. Data on steel strapping sizes are also given.

#### 403. Industrial tape review

Issue No. 8 of Industrial Tape

Corporation contains a listing of the applications of the company's industrial tapes. Included in the listing are tapes for masking applications in spray finishing, non-staining tapes for packaging and holding parts in place on stoves, refrigerators, washing machines, etc., and tapes for packaging and protective applications requiring transparency and resistance to moist-

#### 404. Combination gas-oil burners

A new combination gas-oil burner has been designed for rugged applications where it will burn light or heavy oil as well as gas of any BTU content. It will burn natural gas at atmospheric pressure to give single valve control. Complete information is contained in Bulletins 225 and 225-S available from North American Mfg. Co.

#### 405. Intermediate press brakes

Complete design details and specification of Verson junior and intermediate press brakes are contained in Bulletin JIB-49 issued by Verson Allsteel Press Co.

# 406. Steam gun for cleaning large metal parts

Information on cleaning metal parts with a steam gun is contained in a new folder published by Oakite Products, Inc. It is stated that the steam gun is especially applicable for cleaning metal parts that are too large to be soaked in tanks or conveyed through washing machines.

#### 407. Floor chain conveyor

A four-page folder contains a typical layout for the use of a new floor type tow conveyor manufactured by the Jervis B. Webb Co. The "Towveyor" is a continuous chain conveyor with the chain running in a steel slot below the floor. It is said to result in faster more efficient handling of packages, boxes, parts, barrels, etc.



A HARD PILL TO SWALLOW!



# To help you with your ceramic finishing problems

Binks engineers have designed, built and installed complete finishing systems for many of the nation's leading porcelain enamel industries. Over a long period of years these men have acquired valuable experience that is available to you, without cost or obligation—in your own plant. These men will help you solve trouble-some ceramic finishing problems, advise and assist in making present systems more efficient

or consult with you about new equipment, handling methods and systems.

The primary job of Binks engineers is to help you, in any way they can, to produce better ceramic finishes, faster . . . for the least cost. You just write the Binks branch nearest you or the address given below and ask for a Binks engineering service man. There is no obligation.

#### Binks industrial spray finishing equipment gives you these important benefits:

- Lower costs through faster, better finishing that cuts rejects.
- A single source for everything required for spray finishing; simplifies purchasing.
- Complete installations and methods for economical materials and products handling.
- Automatic finishing that can be adapted to flat-

ware and many other products at big savings.

- Specialized equipment for the particular needs of ceramic porcelain and other industries.
- Engineering and technical service and consultation on any problems of finish or equipment.
- Immediate delivery on standard equipment, such as spray guns, material tanks, etc.

Binks

MANUFACTURING COMPANY

3122-40 Carroll Ave., Chicago 12, III.

NEW YORK DETROIT LOS ANGELES ATLANTA BOSTON CLEVELAND DALLAS MILWAUKEE NASHVILLE PHILADELPHIA PITTSBURGH ST. LOUIS SAN FRANCISCO SEATTLE WINDSOR, ONTARIO, CANADA



Send now..

... for your free copy of our new Catalog-Data Book. Please request your copy on your company letterhead. -> from Page 63

is said to posses a melting point 100 degrees higher than that obtainable with a straight aluminum type grease. The new grease, transparent green in color, is recommended for industrial applications requiring a heavy grease, especially large heavily loaded presses.

# D-26. Palletainers serve for storage or materials handling



Built to serve as storage or handling containers for production materials, Palletainers won't bend, sag, or buckle. Manufactured by Union Steel Products Co., the units are constructed to stand up under the weight

of castings, forgings, and other heavy parts. Lightweight, but strong, they can be loaded and stacked high safely because they interlock in tiers yet still allow the use of fork lift or hand lift trucks.

#### D-27. Plastic soft jaws for chucks

A new lightweight plastic soft jaw blank for lathe work has been developed by Gisholt Machine Co. The jaw is a molded phenolic type of plastic. It can be machined to size with the same feeds and speeds as used for brass. The jaw can be used for either lst or 2nd operation work. It is recommended for cast iron, aluminum, brass of any other material that does not require coolant during machining.

#### D-28. Thermometer for remote and multiple indications

A new electrical thermometer has been designed particularly for industrial applications where remote indications are necessary by Weston Electrical Instrument Corp. The thermometer employs a sensing element, known as a resistor bulb, which can be placed in tanks, bins, machines, etc., with the direct indicating instrument mounted any reasonable distance away from the bulb. With the incorporation of a selector switch and multiple bulbs, a number of temperature measurements are possible while using but one indicating instrument.

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# D-29. Permanent plate magnet has self-cleaning principle

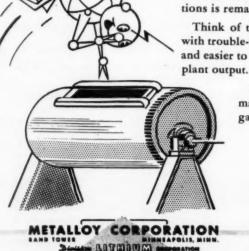
Completely automatic separation of magnetic and non-magnetic materials with a plate magnate is said to have been achieved with a new self-cleaning plate. This permanent non-electric magnet unit, made by Dings Magnetic Separator Co., is designed to provide moderately priced automatic removal of contaminating iron from liquids, chemicals, ceramics, plastics, etc.; and to prevent fires and explosions caused by tramp



Lithium Titanate-B is a remarkable new flux for regular ground coats and for acid-resistant ground coats. As little as 1/2 to 1% in mill additions is remarkably effective.

Think of the advantages this new flux offers you. First grade ware with trouble-free plant operation. "Hard" enamels that are more fusible, and easier to work with. Acid resistance at low temperatures. Increased

Isn't all this worth dropping the handy coupon into the mail NOW? Basic information will be supplied at no obligation. But mail it NOW!



METALLOY	CORPORATION, Rand Tower, Minneapolis 2, Min	nn.
	: end me basic information on Lithium Tita nill additions.	inate-B
Name	Title	
Company.	Address	

iron sparks in dust laden atmospheres. It can be installed over conveyor belts, spouts or chutes.

## D-30. Wedge-layer walrus polishing wheels

Walrus hide polishing wheels of wedge-layer structure that are said to completely eliminate abrasive injury in fine finishing, together with solid walrus hide polishing wheels, are now available from Green, Tweed & Co. The polishing wheels are supplied in all thicknesses up to and including 7/8".

# D-31. "Simplytrol" indicating pyrometer

New pyrometer indicators, made by Assembly Products, Inc., have dials calibrated in both Fahrenheit and Centigrade. Scales are 3 inches long. The metal case measures 33/4" wide by 33/8" high and has a one-piece crystal clear plastic front. For accurately measuring temperature in furnaces and ovens, or in various types of baths. It is offered in several ranges for heat up to 2500° F. and 1370° C.

## D-32. Step-up handpiece increases grinder speed three times

A new step-up handpiece speeds work to 5000 rpm., or higher, for carbide cutters, rotary files, mounted grinding wheels, abrasive rolls, and other applications, according to the manufacturer, Wyzenbeek & Staff, Inc. On standard 3600 rpm. single speed grinders, an operator can now get over 10,000 rpm.

# D-33. Double vertical spindle grinder

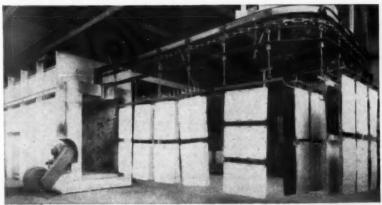
A double vertical spindle grinder has been designed by Chas H. Besly & Co. for faster precision grinding of small parts. The machine grinds wet or dry as fast as it can be loaded. With manual loading, the grinder has a rated output of 2400 pieces per hour. With a hopper feed attachment the machine is rated up to 5000 or more pieces per hour.



—it moves with a steady, even rhythm that gets results in high volume at low cost, and supplies the right parts to the right place at the right time.

Bottlenecks are avoided...piling up of parts is eliminated... idleness of machinery from failure of material supply is done away with. Webb Conveyors provide a means to organize production into an orderly, continuous flow, and to provide live storage where needed.

For three decades, Webb has been providing conveyors for the most exacting production in industry. We have an organization which knows its job—knows how to select, design and build the right conveyors for your job.



Write or phone for specific recommendations on your own needs.

JERVIS B. WEBB COMPANY

Conveyor Engineers and Manufacturers

8951 ALPINE AVENUE . DETROIT 4 MICHIGAN
Officer in Principal Cities

#### We're all for the SAFE TRANSIT program

(Continued from Page 32)

General recognition of the fifth zone as the proper impact to use on the Conbur test was one step forward. The more impressive test, however, was for vibration, and our purchase of a L.A.B. test table, early last year, seemed to satisfy everyone. The research behind this testing device, some it done by our own personnel at Mansfield, was very convincing.

# Package testing laboratory established

When our L.A.B. tester was re-

ceived, we set it up along with the Conbur test and our own vibration tester, and fenced off the area, thus "establishing" our Package Testing Laboratory.

We then started to test our active packs in accordance with "Safe Transit" specifications, Project I.

After the packing tests were conducted for several weeks, a meeting was called to show the results to the design engineer, packing engineer, quality control and manufacturing foreman. The reactions at these meet-

ings were always interesting as compromises between the various interested parties usually resulted. A perfect crate will not take a poorly welded frame very far. Several investigations uncovered processes in the unit manufacture that were of marginal quality. The packing test unquestionably speeded up the discovery of these causes of future customer dissatisfaction which in mass production could be so serious if it were not for this "Safe Transit" test.

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Of course, deviations from packing specifications and weak pack designs were also found, always resulting in progress toward a better quality product and a safe delivery.

Although this whole program was most certainly beneficial in reducing damage to the product as received by our customers, it also is the means of reducing the manufacturing cost of the product or the crate. There is no mystery about this, for, if one knows what limit is to be met—as one does in the "Safe Transit" program, a lot can be done in the case where the crate or the product has more cost in it than necessary to meet the tests.

#### Will assist Safe Transit committee

Along with using our packing test area for testing new packs, keeping good quality control on existing packs, we have one other very definite project in mind for the future. More data will be gathered on actual shipping conditions with our rider recorders. This project will undoubtedly add valuable information to our packing test program, and we will be glad to contribute these results which should be of value to the Technical Planning Committee. Thus it can be easily seen how welcome to Westinghouse at East Springfield are the standardization of tests and recognition of same by the carriers incorporated in the "Safe Transit" program.

We have adopted the recommended test procedure of the "Safe Transit" specifications, and will keep all records so that we may keep the Committee posted with the results and data that will contribute to the success of this worthy program.



#### NEWS

→ from Page 60

radio broadcast and the official release widely varied from one another. We are very much in business and expect to remain so."

#### Armco is host to ACS section

Eighty members of the Southern Ohio Section of the American Ceramic Society were recently guests of Armco Steel Corp., in Middletown, Ohio. The group toured Armco's research laboratory and its East Works plant.

E. K. Welles, president of Charles H. Besly & Co., Chicago manufacturer of high speed and carbon taps, has announced the opening of the company's new branch office at 7376 Grand River Ave., Detroit 4, Mich.

#### **Barnes & Reinecke appointment**

James F. Barnes, president of Barnes & Reinecke, Inc., has announced the appointment of Thomas W. Alder as executive vice president and treasurer. Alder was for many years secretary of Von Lengerke & Antoine, Chicago, later was president of Balke Mfg. Co., Rock Island. Barnes also announced the recapitalization of the Chicago design and engineering firm.

#### Pemco names additions to research and development staff

Four new members have been added to the Research and Development Laboratories staff of Pemco Corporation, according to an announcement by Dr. G. H. Spencer-Strong, vice president and director of research.

The new men are: Howard F. Smalley, a graduate of Rutgers U. with an M.S. in ceramics, who has been assigned to the enamel research section; Norman Bouder, formerly with Armstrong Cork Co., and a graduate of Lebanon Valley College with a B.S. in chemistry, who has been assigned to do research in glass colors; Robert Carpender, formerly in the metal laboratory of General Elec-



# ONE ALWAYS STANDS OUT!

In the field of metal cleaners, Wyandotte Porenac is an unequaled performer.

Prepared especially for the removal of drawing lubricants prior to pickling in porcelain enamel plants,
Wyandotte Porenac emulsifies the toughest mineral oil compound with speed, economy and certainty.

The superior action of this balanced formulation eliminates the necessity for pre-cleaning, and thus greatly reduces over-all cleaning time. Its concentration requirements are low — its life in solution remarkably long.

Important, too, are the free rinsing qualities of Wyandotte Porenac, which prevent contamination of solutions in subsequent operations.

Wyandotte Porenac is of such versatility that it probably can be adapted to your specific problem, whether it be cleaning prior to porcelain enameling, barrel-plating, oxide finishing or other heavy-duty cleaning operations.

Your Wyandotte Representative will gladly tell you more about this and other Wyandotte Metal Cleaners. A call will bring him.



SERVICE REPRESENTATIVES IN 88 CITIES

WYANDOTTE CHEMICALS CORPORATION . Wyandotte, Michigan

tric Corp. and a graduate of Union College with a B.S. in chemistry; and Melvin J. Faby, formerly with Revere Copper and Brass in Baltimore, assigned to the Pemco Laboratories as a chemist.

#### Canadian Ceramic Society 47th annual meeting

Papers and discussions on plant and process problems was the general theme of the 47th annual convention of the Canadian Ceramic Society held in February in Hamilton, Ontario. Two days were devoted to technical sessions and one day was given over to trips through ceramic plants in the Hamilton area.

The new president of the Canadian Society for the coming year is P. H. Swalm, of Frontenac Floor & Wall Tile Co., Ltd. George Emery, of Ecanada Art Pottery, Hamilton, is the new first vice president. Howells Frechette, Ottawa, continues as secre-

tary and L. C. Keith, Toronto, as assistant secretary-treasurer.

The new slate of officers for the Enamel Division includes the following:

Chairman: T. W. Fenton, General Steel Wares, London, Ontario.

Secretary: J. H. Henderson, Armco Steel Corp., Montreal, Quebec.

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Directors: M. P. Durrant, Frigidaire Corp., Leaside, Ontario; M. Reagan, Stamped & Enamel Ware, Hespeler, Ontario.

Frank Porter, of Inland Steel Co., presented a paper on "Titanium Enamelling Steel" before the Enamel Division. Other papers included "Porcelain Enamel for Architectural Purposes," by B. J. Sweo, of Ferro Enamel Corp.; "Electrostatically Charged Particles in the Detection of Defects in Porcelain Enamelling," by W. Jones, of Williams & Wilson; and Otto Klein, of Steel Company of Canada, discussed sheet steel production "The New and the Old."

Theodore Lenchner, of Vitro Mfg. Co., discussed "Vitreous Colours, Precaution and Firing Factors," before one of the sessions.

The 1950 convention of the Canadian Society will be held in Niagara Falls, Ontario.

#### Hofstetter given Ferro award



At the annual sales meeting of Ferro Enamel Corporation, held in Cleveland recently, G. W. Hofstetter, manager of Ferro's midwest territory, was presented with the company's 1948 Annual Sales Award for outstanding accomplishments during 1948. In the photo, G. A. Hutt, right, general sales manager, is shown presenting a silver tray award to Hofstetter.



Sparkler Horizontal Plate Filters effectively remove all solids and precipitates from plating solutions—provide positive assurance that solutions are free from undesirable matter.

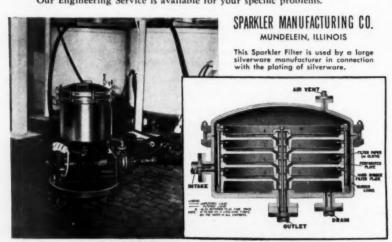
The horizontal plate principle used by Sparkler makes possible the formation of firm, stable filter cakes that will not slip or crack under intermittent or continuous flow. Flow through the filter is always with gravity, and filter aid is

Though now. Flow through the filter is always with gravity, and filter aid is floated into position, forming a firm cake of even thickness.

The accompanying photograph shows a typical Sparkler installation in a modern plating plant. Previously, in this plant, silver chloride slurry was shoveled into crocks and laboriously washed by decantation. Now, chloride is mechanically agitated, collected, and washed in the Sparkler filter, Cost of the operation has been sharply reduced and quality of the chloride has been greatly improved.

Filters are pressure-tight and leakproof, and are available in rubber-lined construction, stainless steel, or iron. Capacities from 60 to 10,000 G.P.H.

Our Engineering Service is available for your specific problems.



# Government expenditures and effects of tax policies on corporation earnings

(Continued from Page 35)

run as much as 50% of the reduced national income.

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"We are obviously living far beyond our income, and yet our government is planning to spend billions more for subsidies, social security, health, and educational benefits. Individuals who believe that they can live beyond their incomes eventually land in the poorhouse, jail, or a mental institution. Nations which have lived beyond their incomes have ended up with loss of liberty to dictators or to stronger nations.

"The political attack on profits is the subtle approach to socialism. Unless fair profits are allowed to industry in good times, industry cannot survive depressions.

"The survey of current business published by the Department of Commerce for July, 1948, shows that wage dollars from 1929 to 1947 increased over 137%, while profit dollars increased only 112%, and dividends to owners increased only 19%. On the other hand, taxes increased over 735%.

"For nearly a century, industry has demonstrated that increased use of power, greater mechanization, and labor-saving devices have permitted constantly increasing wages, accompanied by higher standards of living. If profits are reduced by taxation or restrictive laws, industry cannot obtain the venture capital necessary to continue its progress in labor-saving facilities.

"The public must learn that federal corporation taxes are not paid by corporations, but are actually indirect sales taxes collected by corporations and turned directly over to the federal government. These federal corporation taxes are collected from every family which buys meat, milk, or any other necessity from a corporation, and they place a higher percentage of tax on the poor family than on the well-to-do family.

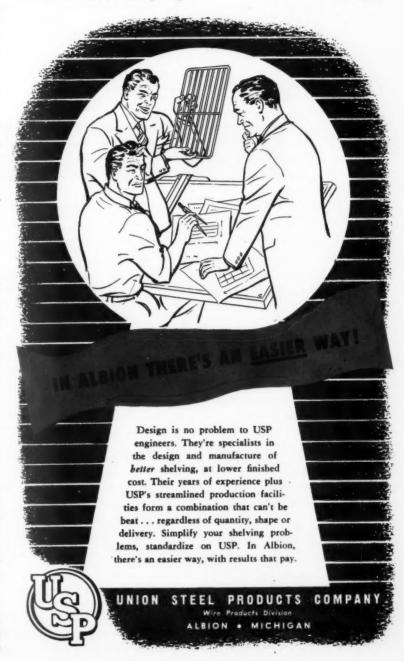
"High taxes and fear of nationalization brought about the decline in British industrial efficiency and paved the way for socialism. The British

labor government now knows the problems of government-managed industry; it, therefore, hopes to nationalize the shares of the steel industry and retain the present management to run the plants. But, rugged individuals in the British steel industry have definitely announced that they cannot, and will not, manage a gov-

ernment-owned industry, because the government will insist on controls over personnel and policies. Such controls cannot be divorced from active management without disastrous results.

"Just the threat of government entry into business competition in this country has already resulted in reduced capital expenditures in private industry and has brought about paralysis in the security exchanges.

to Page 73 ->



Colors on a spree?

Don't flee!



#### Call on DRAKENFELD, your partner in solving color problems

WHY RUN AWAY from porcelain enamel color problems when you can let Drakenfeld step in to help solve them? Whether you produce domestic, commercial, architectural or industrial porcelain enamel products, our technologists will gladly put all their skill and experience at work to produce colors that fit your frits.

While keeping your production methods foremost in our thinking, we always work with an eye towards cutting your costs. By taking every precaution to check formulation we feel certain that we can provide colors that will help you attain greater production, fewer rejects and a better profit.

Let us demonstrate how our color research and technical counsel can help you get the kind of porcelain enamel colors you want. Get in touch with us today. **DEPENDABLE SERVICE ON:** Oxide Colors . . . Screening Paste . . . Graining Colors . . . Squeegee Oils and Mediums . . . Rotospray Sifters . . . Steveco Grinding Mills . . . Porcelain Grinding Balls . . . Porcelain Mill Linings.

#### 5 SAVINGS WITH STEVECO MILLS

Time Labor Horsepower Floor Space Initial Costs



in pr

Steveco high-efficiency duplex mills wet-grind porcelain enamel materials faster, better and at low cost. Many outstanding construction features proved in hard day-after-day service in many plants. Wide range of sizes and linings, with all types of drives. Write for catalog, then let us study your grinding needs and recommend the correct type for your requirements.



#### Rotospray — a millroom must!

The Rotospray helps you get properly prepared slip for the production line. Indispensable for "reconditioning" enamel slip. Equally valuable at ground coat dip tanks. Ideal for any job that requires speedy, positive sieving. Strains through a long-life vertical screen—no clogging. Standard and Junior sizes. Capacities range from 300 to 1,000 G.P.H.,

depending on nature and specific gravity of product, screen mesh and sifter size. Write for descriptive folder.



B. F. DRAKENFELD & CO., INC. • 45-47 Park Place, New York 7, N. Y.

Factory and Laboratories: Washington, Pa.

Pacific Coast Agents: Braun Corp., Los Angeles 21 . . . Braun-Knecht-Heimann Co., San Francisco 19 → from Page 71

"Let us hope that there is still time to convince our people that we have outdistanced every other nation in past or present history through the individual competitive free enterprise system, which cannot survive without adequate profits; and, that the lowest standards of living and the greatest restrictions on personal liberty are found in the countries which have adopted socialism and communism.

"The directors of the Standard Steel Spring Company believe that their company's advertising campaign is for the benefit of all employees, customers, and stockholders. It is a contribution to our national welfare, which is threatened by the spectre of communism."

#### How Union Pacific is tackling the freight loss and damage problem

(Continued from Page 33)

artist's drawings of railroad men at work, the posters feature photographs of Union Pacific employes: checkers, truckers, stowers, engineers, and others. Each man is quoted on his opinion as to how his job should be done to prevent freight loss and damage.

For instance, under the catchy headline "Careful Loader or Careless Juggler?", J. S. Goulart, tractor driver at the railroad's Los Angeles freight house, is quoted to the effect that "Careless loading or overloading of trailers is frequently responsible for damaged freight."

#### All sections of road represented

Pictured and quoted workers were selected on a geographical basis in order to have all sections of the railroad represented. This, Wullstein believes, will give employes on every part of the railroad a feeling of importance, a feeling of being an integral part of the whole operation of moving freight. In addition, esprit de corps between widely separated

points on the railroad is engendered.

"These posters were designed to drive home the idea that moving freight safely is a personal problem—a matter of job permanence, keeping and building business, advancement, and, of course, the pay-check."

These points are being put across by such terse lines as "Diligence Denotes Dependability . . . Dependable Men Win Advancement" and "You too can avoid damage to freight . . . Keep shippers satisfied . . . And thus assure the permanency of your job." Another, designed to build morale, reads "While everybody likes his pay-check, there is no greater reward in business than the personal satisfaction of being recognized as a master workman in his chosen field, one who merits promotion when opportunity knocks."

"We have already received many letters from other railroads evincing interest in the posters," Wullstein declared, "and we are hopeful that the idea may spread." with each other as they go about their work.

The Enamel Laboratories are completely equipped for the application of porcelain enamel and also include equipment for some of the simpler and more rapid types of tests. Boxtype electric furnaces are used for normal operations; however, when necessary, the laboratory model continuous enameling furnace operated in the plant control laboratory may be used to obtain information as to the behavior of newly developed materials when fired under production conditions.

The Glaze and Body Laboratories and the Glass Enamel Laboratory are also fully equipped for their respective types of work.

The Smelting Laboratory is equipped with four rotary test smelters, two of which are fired with gas and two with oil. The smelters have removable barrels so that it is possible to change materials being smelted on a particular rack by simply interchanging smelter barrels.

The laboratory also includes as part of its equipment a box-type smelter and a gas-fired laboratory kiln capable of reaching temperatures in excess of 3000 degrees in a comparatively short time. This furnace is extremely valuable due to its flexibility, high operating speed, and due to the fact that it may be used for calcination, crucible smelting, or the maturing of extremely high temperature enamels or glazes. A second furnace of this type of a larger size is on order and will shortly be installed.

The laboratory building proper is of brick and concrete construction with an unusually large window area along the side walls so that the other wall of each laboratory from a height of approximately 3½ feet from the floor consists largely of glass. This not only makes excellent natural illumination on gloomy days, but also makes possible adequate ventilation during the summer season. This, together with an accoustic ceiling and fluorescent lighting throughout, provides unusually pleasant working conditions for the staff.

#### The modern porcelain enamel research laboratory

(Continued from Page 38)

that new methods of research and development are required. The new Physical Measurement Laboratory includes not only the old, tried and valuable equipment for determining the physical properties of enamels but also special equipment to make possible a more fundamental type of research. This includes a Two-Meter Spectrograph, a 3X Surface Diffraction X-Ray Unit, and a Spectrophotometer for the investigation of color

problems.

The Chemical Laboratory has been completely re-equipped and is designed for maximum efficiency of operation. The work benches are constructed in the form of an "E" with the hoods so placed that they can be reached from any of the working areas with a very few steps. It has been found that the layout not only conserves space but also minimizes the interference of personnel

# Definitely TOP BILLING...

The Outstanding Performance of the Industry's Most Successful Finish.

1400-50 F

1400-50 F



YOU asked for low temperature enamels and again PEMCO pioneering and research pays off . . . for you. This time with 1400°-50° NEOWITE—the most outstanding porcelain enamel finish in the low temperature field . . . a brilliant achievement and a far step forward toward lower production costs and greater overall profits.

In 1400°-50° NEOWITE you have a GENERAL ALL PURPOSE ENAMEL with all the splendid characteristics of regular NEOWITE. Here is a finish that not only reduces fuel costs but eliminates scrap and warpage... a stable white whose color is not affected over a wide firing range and on refire. 1400°-50° NEOWITE is acid resistant, the equal of any titanium finish, regardless of temperature range or firing time. Its adherance is amazing. We have yet to see better. And like all Pemco Finishes the uniformity of 1400°-50° NEOWITE is assured by continuous smelting.

Write, wire or phone for details NOW for NEOWITE and its corresponding 1400°-50° GROUND COAT . . . Samples if you wish.

# PEMCO CORPORATION Baltimore 24, Maryland

Always Begin With a Good Finish

#### **Sink production at American Central**

(Continued from Page 22)

ment, and the air supply is maintained at constant temperature.

#### Three coat enameling system

Every sink gets three coats of enamel, a ground coat and first and second white coats, the last of which is a special acid-resistant enamel. Incidentally, American Central uses only enameling steel in all sink fabrication.

# Air-conditioned spray rooms with water-wash equipment

The three coats of enamel are applied in three 35-foot water-wash spray booths of very similar operation; all accommodate five sprayers, are thermostatically controlled for temperature, and air-conditioned to prevent the entrance of any foreign matter during spraying. The conveyor usually travels at a speed that allows three sinks to be enameled per minute.

In the five-man spray both operation, the first man sprays the sink back, then the sink bowl bottoms, complete bowl, end rails and back splash, and front rail and drain boards are done in succession.

Between the coats of enamel, the conveyor carries the sinks through drying ovens about 150' in length, with a temperature of 350 degrees maintained to assure proper drying. Leaving these ovens, the sinks are gone over with an air hose to remove all foreign matter before the firing

operation that follows. Two men are stationed at the proper places to unload pieces from the drying oven line and transfer them to the furnace line.

Sinks are fired about 5½ minutes in each furnace, at temperatures, successively, of about 1550, 1520 and 1530 degrees during the three passes of the enameling system. Several workers use nylon bristle circular brushes to remove coats of enamel around openings in the sinks between the firing operations, forestalling the possibility of enamel cracking at these places during assembly.

# Automatic sealing rig used for packaging

American Central maintenance men fabricated a very efficient packaging aid for sinks that leave the conveyorized journey, finally, and are ready for shipment. One man applies glue manually at certain spots on the carton's flaps over the packaged sink, and then the carton enters the automatic sealing rig.

This automatic sealing device is constructed of angle iron, welded into place just over the conveyor carrying the cartons to shipping. As the carton moves under the rig, it trips automatically timed glue-spraying guns that spot the glue where it will make the strongest seal. Then the carton flaps are automatically closed and the package travels several feet under rollers that press the flaps firmly into place, ready for shipment.

#### rom Page 26)

(Continued from Page 26)

Auto-age street signs for San Francisco

the salt is left behind. This fine salt encrustation eventually aids in corrosion of the surface—unless it is protected. Porcelain enamel is the only answer.

Once the decision was made to resign the city's intersections with the modern markers, there was a public clamor for speed. No one had realized how unsuited the old signs were to present traffic conditions until the contrast showed them up. The traffic engineers divided the city into seven sectors and speeded up the job. Four

sectors are now almost completed.

#### Twenty-four thousand sign plates

The total job will call for signs at 6000 intersections—each sign, of course, taking four letter plates, and four block number plates. Each name plate weighs about three pounds, each number plate about a half pound, so a considerable tonnage of metal is involved. The cost will run in the neighborhood of \$350,000, a figure which includes the setting, and the cost of any additional

poles that may be required in erecting the signs where formerly there were none.

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Apart from convincing the "economizers" of the superiority of porcelain enamel for the job, the engineers had one rather trying problem to overcome. It involved the embossing and cause some of the porcelain enameling firms which were interested in the work to try to talk the City out of the raised letter idea. But the advantages of the embossing were too apparent for the designers to give it up so easily. The problem was, getting the embossing done with letters differently spaced. For example, there is one thoroughfare called Junipero Serra Blvd. And there is one called Bay. But all the sign plates are the same size. Letters had to be placed and spaced differently on the two plates, obviously-in the first closer together and with slimmer strokes, narrower spread; in the second farther apart, thicker in their strokes, rounder in their spread, so as not to look lost on the large surface. This presented a problem in the matter of the number of dies, but it was eventually worked out satisfactorily.

Contracts are awarded on bids, and for the first four sectors of the program, low bidder has been Ferro Enameling Company, Oakland.

Similar street sign redesigning programs are being undertaken in Oakland and Berkeley, across the Bay from San Francisco; the city of San Rafael, north of the Golden Gate, also is planning sign redesign, all employing porcelain enamel.



#### THE FINISH LINE (Continued from Page 17)

time element has been too long to be considered satisfactory.

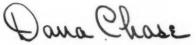
Finish pointed to the steel industry with the suggestion that markets would be lost to competing materials if there was a continuing critical shortage of enameling

Finish has repeatedly criticized the porcelain enameling industry for its backwardness in failing to do a creditable job of educational advertising to tell the salesman and the consumer about its products.

These represent only a few instances of suggestion or criticism which have been offered to our readers in the hope of being progressively helpful as an industrial trade publication in furthering the interests of the industries we serve.

After reading Mr. Eastman's comments, we are inclined to believe we may have been overly conservative, and for this reason if, in the months to come, The Finish Line seems to be getting increasingly "warm" or even "hot" in spots, some credit at least will be due to the Eastman "candid" comments.

Should any reader, at any time, take exception to material appearing in finish, we shall be most happy to receive your comments or criticism, and to print them if permitted.



EDITOR AND PUBLISHER

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# ROLLED PRODUCTS DIVISION Michigan Steel Casting Company 1999 GUOIN ST. DETROIT 7, MIC One of the World's Pioneer Producers and Distributors of Heat and Corrosion Resisting Alloys



HEN you order Oakite Composition No. 63 for HEN you order County Composition No. tion No. 24 for tank cleaning or Oakite Composition No. 30 for neutralizing-or other Oakite materials for these purposes-you buy a lot more than drums of chemicals.

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# Why does an AR



REMOVE 92% OIL, WATER AND DIRT FROM GAS AND AIR LINES?

STUDY EXPLODED VIEW FOR ANSWER Four multi blade rotors revolve at high speed in opposite directions under impact of air movement through non-aligned rotor spaces. Moisture, dirt and other foreign matter which collect on rotor blades are thrown out of air stream by centrifugal force to side of housing. and pass into drain.

For paint and lacquer praying, ceramic, sand blasting, air cleaning, etc. Easily replaces less efficient baffle type devices. Tell us details of your problem when you write for a catalog.

CAPACITY RANGE: AS LOW AS 7 CFM TO 17,000 CFM.

Made By The Manufacturers of Logan Lathes and Shapers.

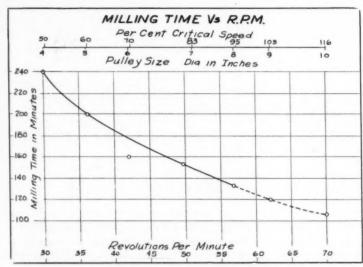
INLET



# Correct milling methods for wet grinding porcelain enamels

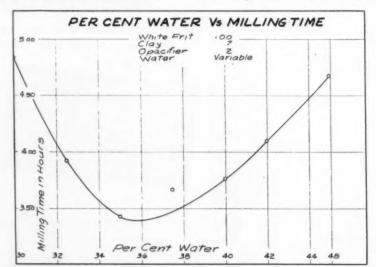
(Continued from Page 44)

Prior to using a mill after lining, a charge of sand or scrap frit with the addition of clay and water should be run. About twice the normal millof air pressure is recommended, as mills have been known to "explode" when higher pressures were used. A pressure regulator and air filter



ing time is recommended. After a thorough washing, the mill should be inspected to see that the excess cement has been removed. After milling reclaimed enamels, the mills should be

should be installed in the air line. A good grade of  $1\frac{1}{2}$ -2" fluid hose should be used for conveying the enamel from the mills to the storage tanks. Separate hose sections are rec-



inspected for foreign materials such as castings, hooks, etc., that may have been added to the mill with the reclaimed enamel.

Unloading of the mills may be accomplished by gravity or by compressed air. A maixmum of 10 lbs. ommended for ground coat and white enamels and they should be inspected periodically for deterioration.

Prior to emptying a mill, the fineness should be carefully checked and a sample made and fired. This is examined for cleanliness, texture, etc. Acid resistance and reflectance tests are made when necessary. After the sample is OK'd, the enamel is emptied from the mill, screened and passed through a magnetic separator to the storage tank. Adequate records should be kept of each mill with mill formula, sources of materials, smelt numbers of frits, fineness, specific gravity, milling time, etc.

The operation of a mill room is not especially difficult, but requires care, alertness and attention to each detail for good smooth operation. Accurate records and periodic checkups are essential. A definite plan of operation should be determined, then constantly adhered to, in order to obtain high quality and uniform results.

Adapted for finish from a paper before the Chicago District Enamelers Club. Based on Porcelain Enamel Institute bulletin, "Ball Mill Wet Grinding of Porcelain Enamels."

#### Letters on SAFE TRANSIT

-> from Page 34

amel Institute which has for its purpose the reduction of damage in transit to porcelain enamel products. In my opinion the comprehensive plan advocated and which is so well described in your publication is entitled to commendation of carriers and I note with considerable satisfaction that the Freight Claim Division representing the railroads is taking an active part in it. Speaking for this company, you may be assured that we will participate in the joint effort by exercising the greatest care in transporting the products while in our charge. We will observe with interest as the program progresses and cooperate in the over-all effort.

As an indication of our interest in loss and damage prevention, am enclosing samples of two pamphlets entitled "If It's Worth Shipping It's Worth Packaging Right" which has been given wide distribution by this company, also information concerning a series of bulletins being used to instill greater interest among our employes together with samples of the 12 posters referred to therein.

H. F. Davis Supervisor Loss & Damage Prevention

# Dividends throughout the year from this investment

Do you operate a porcelain enameling plant? As a Business? As a department of a finished product manufacturing plant? — Do you use large quantities of porcelain enameled parts?

If your answer is yes to any of these questions, one of your first investments for 1949 should be in a Porcelain Enamel Institute membership.

The dividends start immediately and continue throughout the year — dividends in plant operation, dividends in testing, dividends in technical and marketing information. You will have the cooperation and backing of one of the country's strongest and most influential trade associations.

You get these dividends in return for your cooperation and a very modest annual investment in association dues.



This Emblem . . . . . designed by P.E.I. identifies products finished in genuine Porcelain Enamel. It sets these products apart as having the highest quality finish and guides the purchaser in making his selection. It is offered to manufacturers using genuine Porcelain Enamel as an important part of their product finish.

- 1. MARKET DEVELOPMENT COMMITTEE marketing, advertising and publicity.
- 2. COMMERCIAL RESEARCH COMMITTEE market trends and opportunities.
- 3. PRODUCT STANDARDIZATION COMMITTEE standards, testing and performance specifications.
- 4. PROCESS DEVELOPMENT COMMITTEE new developments, equipment and processes for plant operation.
- 5. FORUM COMMITTEE develops programs of importance for annual forum for plant men.
- 6. INSTITUTE DEVELOPMENT COMMITTEE expanding the opportunities for greater Institute service and broadening Institute activity.
- 7. SALES AND MANAGEMENT CONFERENCE COMMITTEE
   annual conference on selling methods and demonstration techniques.
- 8. PACKAGING AND SHIPPING COMMITTEE—Developing testing equipment standards for packaged products and coordinating information on the best methods for cutting shipping damage.

If you haven't applied for membership in the P.E.I., call your secretary now and dictate a note to —

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